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USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK, VOLUME 140, F-16 AIR--ETC(U)
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17. ABSTRACT (Continue on reverse side if necessary and identify by block number) The AF32A-25 noise suppressor is made by the Jetway Equipment Corporation for acoustical suppression of the F-16 aircraft. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating in this suppressor for four engine power configurations. Near-field data are reported for three locations in a wide variety of physical and psychoacoustic measures:		

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overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application", AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

PREFACE

This report was prepared by the Biodynamic Environment Branch, Aerospace Medical Research Laboratory, under Project/Task 723107, Technology to Define and Assess Environmental Quality of Noise From Air Force Operations.

The author gratefully acknowledges Mr. John Cole and Mr. Robert Powell for their assistance in preparing this report, Mr. Jerry Speakman and Capt Richard Gorman for their assistance in acquiring the raw data, Mr. Keith Kettler, Mr. Henry Mohlman and Mr. Fred Lampley of the University of Dayton for assistance in the mechanics of data processing, and Mrs. Peggy Massie for assistance in typing this report.

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INTRODUCTION

The F-16 is a single seater, multi-purpose fighter powered by one Pratt and Whitney F100-PW-100 engine. The aircraft is manufactured by General Dynamics. The AF32A-25 noise suppressor was built by Jetway Corporation to provide noise level reduction for all F-16 aircraft during ground runup operations.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this aircraft during ground runup operations. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with ground runups of the F-16 aircraft operating in the AF32A-25 noise suppressor.

This volume is one of a series published by the Aerospace Medical Research Laboratory (AMRL) under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and ground support equipment. The far-field, community-type noise data in the handbook describe the noise produced during *ground operations* of aircraft, ground support equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Volume 2 provides a method and data for adjusting the handbook's far-field noise data, which are for standard meteorological conditions (15°C temperature, 70% rel humidity, 0.760 meters Hg barometric pressure), to derive comparable data for other meteorological conditions. *Refer to Volumes 1 and 2* (references 1 and 2) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight/flight crew and passenger noise, near-field/ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published and is available upon request from AMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index.

Direct any questions concerning the technical data in this report and other handbook volumes to: AMRL/BBE, Wright-Patterson AFB, OH 45433; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 1: Organization, Content and Application*, AMRL-TR-75-50 (1), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.
2. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 2: Procedure to Evaluate Effects of Non-standard Meteorological Conditions on Far-Field Noise*, AMRL-TR-75-50 (2), AMRL, WPAFB, OH, 1975.

NEAR-FIELD NOISE

MEASUREMENTS

AMRL acquired near-field noise data on the AF32A-25 noise suppressor system during ground runup operations of F-16 aircraft. For these tests the aircraft was located in the suppressor at Hill AFB with no significant reflecting surfaces in the vicinity except the ground plane. Table 1 gives the surface meteorological conditions and the four engine power conditions. The ground-crew chief selected power conditions and near-field locations generally used during routine maintenance or engine runup for preflight checks.

At each near-field location a test engineer randomly moved a hand-held microphone in and around each location, probing all areas where a crew member's head would normally be located. He recorded all the noise samples on magnetic tape. During analysis of each sample, he determined the one-third octave band root-mean-square sound pressure using a 4- or 8-second integration time to derive a power averaged level for each location. Figure 1 shows the four near-field locations where ground crew are usually located for maintenance and/or preflight checkout operations. Estimates of noise levels at other locations are difficult in the near-field since the noise source is spatially distributed, i.e., not a point source. The noise levels at near-field locations can vary widely depending upon relative distances from each noise source (intake noise, exhaust noise, panel resonances, internal engine noise through the engine wall, etc.).

Table 1 lists the numeric alphabetic designators used on the data pages in this report to identify the measurement locations and test conditions. For example, the designator 1/A means ground crew location 1 and test condition A.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the F-16 aircraft in the AF32A-25 noise suppressor at the three ground crew locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures given in Table 3, which are widely used to assess the effects of noise on personnel and their performance.

All near-field data are for the meteorological conditions at the time of test but are valid for all typical airbase meteorology because of the short sound propagation distances involved.

TABLE 1

**MEASUREMENT LOCATIONS AND TEST CONDITIONS
FOR NEAR-FIELD NOISE MEASUREMENTS**

**F-16 Aircraft Suppressor Ground Runup, Hill AFB Survey
Test #79-738-001, 14 March 1979**

Ground Crew Location

- 1.
- 2.
- 3.

Trim Check Position
Leak Check Position
Ground Observer Position

Aircraft Engine Operation

- A.
- B.
- C.
- D.

Idle Power (65% RPM)
80% RPM
Military Power (91% RPM)
Afterburner Power

Meteorology

Temperature	12 C
Bar Pressure	.643 M Hg
Rel Humidity	32 %
Wind — Speed	4 M/Sec (8 Kt)
— Direction	110 Deg

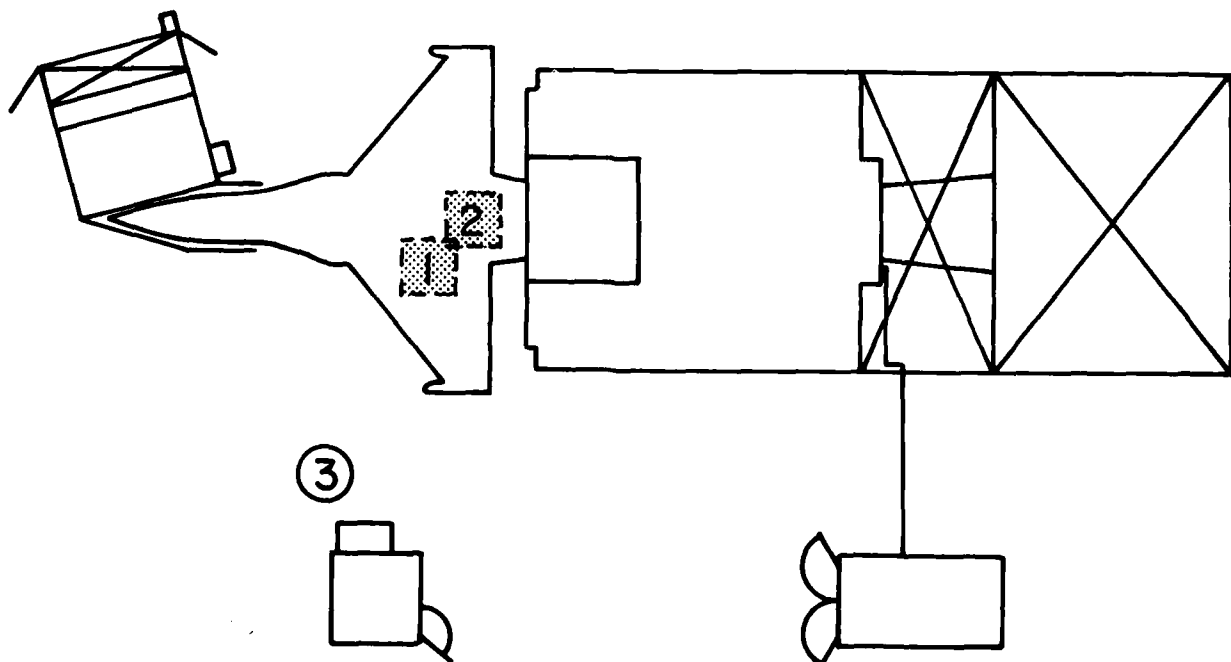


Figure 1. Near-Field Measurement Locations at Hill AFB, Utah

FAR-FIELD NOISE

MEASUREMENTS

AMRL acquired both near and far-field data during a 1- 2-hour test period, thus keeping similar meteorological conditions. Figure 2 shows the ground runup pad, ground cover, aircraft orientation and the 19 microphone measurement sites on a semicircle. The center of the 100 meter radius semicircle used in surveying the AF32A-25 noise suppressor was on the ground directly below the center of the exhaust stack.

Table 4 provides cockpit readouts of engine characteristics (% RPM, fuel flow, etc.) for each power setting used in the far-field tests. Also listed in this table are the surface meteorological conditions during data acquisition.

All microphone measurement sites are in the acoustic far-field of their source where the sound wave-fronts spherically diverge and the noise source may be regarded as a point source.

A portable microphone/tape-recorder system was used to sequentially record the noise at each far-field location. The microphone was attached to a hand held pole, pointed at the source (0° angle of incidence) and vertically scanned from 0.5 to 3 meters for a period of 5-10 seconds during data acquisition at each microphone location. These samples were then time-integrated to derive a root-mean-square sound pressure level. Vertical scanning and time-integrating together reduce anomalies frequently present in data acquired by a fixed height microphone.

RESULTS

Table 5 lists the overall and 1/3 octave band SPL measured at the far-field locations under meteorological conditions at the time of the test. Data in all other figures and tables are based on these levels. These data were normalized to 100 meters distance and standard meteorological conditions (15°C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 3 which provides a compact summary of the far-field noise characteristics of the F-16 aircraft operating in the AF32A-25 noise suppressor in a standard format.

Estimates of the noise levels for intermediate power settings (e.g., 85% RPM) and/or different number of engines operating (e.g., single engine) can be determined as explained in Volume 1 of this handbook.

Figures 4 through 10 are sets of equal noise contours describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. They are respectively, overall sound pressure level, C-weighted sound level, A-weighted sound level, perceived noise level, speech interference level, permissible exposure times for personnel and octave band sound pressure levels.

Data excessively influenced by spurious background/electronic noise were eliminated from all figures and tables.

Test personnel performed noise surveys during quiet periods when the background noise was minimal, e.g., early in the morning when no other aircraft or engine test stands were operating. Data eliminated because they were near the background/electronic noise were generally not significant because the levels were so low.

Volume 2 of the handbook describes the influence of meteorology on far-field noise environments, and provides, if required, the factors necessary to adjust the handbook's standard meteorological day data

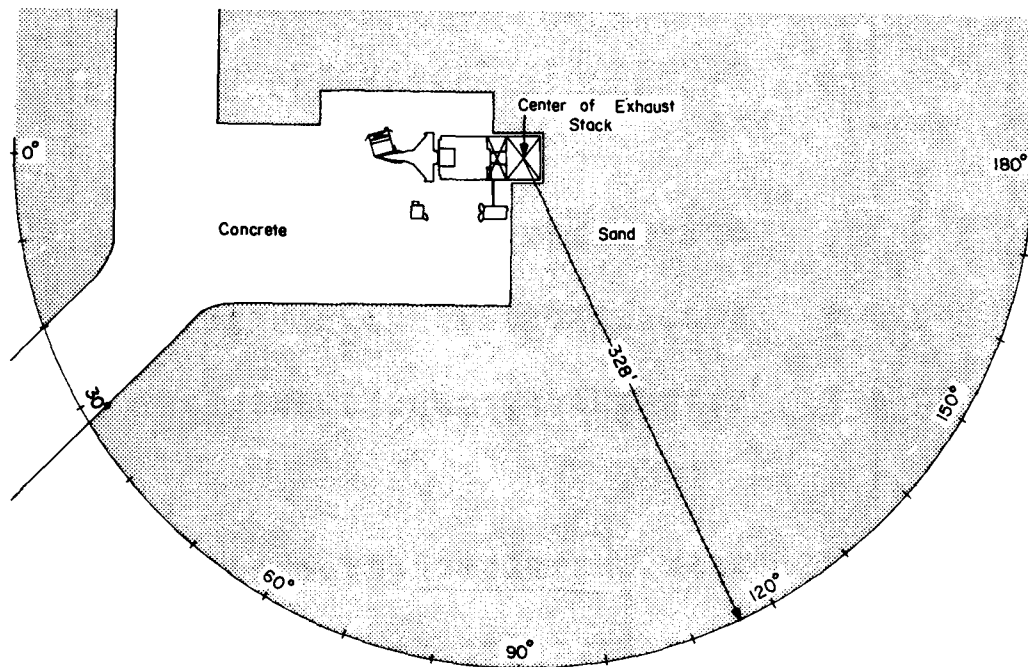


Figure 2. Far-Field Measurement Locations at Hill AFB, Utah

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)													IDENTIFICATIONS:		
1/3 OCTAVE BAND															
2													OMEGA 3.2		
													TEST 79-738-001		
NOISE SOURCE/SUBJECT:													RUN 01		
(OPERATION:															
(A= IDLE PMR (65% RPM)															
(B= 80% RPM													06 APR 79		
(C= MILITARY PMR (91% RPM)															
(D= AFTERBURNER PMR													PAGE F1		
NEAR-FIELD NOISE LEVELS															
LOCATION/CONDITION															
1/A 2/A 3/A 1/B 2/B 3/B 1/C 2/C 3/C 1/D 2/D 3/D															
FREQ (HZ)															
25	78	78	66	90	90	80	97	98	88	103	102	91			
31.5	74	76	66	89	89	80	96	96	87	97	98	92			
40	75	78	68	94	100	81	100	106	91	101	107	94			
50	75	79	68	97	103	82	102	109	91	106	111	94			
63	75	79	69	101	104	86	104	110	90	111	115	96			
80	76	79	69	103	106	88	108	110	93	107	111	93			
100	76	78	70	97	102	84	105	110	91	106	111	91			
125	74	77	67	95	99	82	100	103	87	104	106	89			
160	79	83	67	94	98	78	98	102	84	104	106	88			
200	79	80	68	96	100	87	101	105	88	102	105	92			
250	76	77	69	93	97	81	99	104	87	104	108	92			
315	81	78	69	92	94	74	100	103	86	103	107	90			
400	80	79	66	91	96	75	103	107	87	108	114	94			
500	83	82	70	93	95	78	105	107	88	110	113	93			
630	92	91	77	95	96	78	106	107	88	113	112	94			
800	86	84	71	101	101	83	107	108	90	113	114	95			
1000	86	85	73	99	99	82	106	107	88	113	114	95			
1250	90	89	75	99	100	82	107	108	88	114	115	95			
1600	90	89	74	100	101	86	105	107	88	113	115	95			
2000	91	89	74	98	98	83	103	106	86	112	114	94			
2500	103	101	87	97	97	82	102	104	86	110	112	93			
3150	99	97	81	98	98	81	102	104	86	109	112	92			
4000	99	97	81	100	99	84	103	105	86	110	113	92			
5000	97	96	80	107	103	87	102	103	86	108	111	90			
6300	94	92	76	100	98	84	102	101	85	106	108	88			
8000	95	93	77	100	99	84	100	101	87	105	108	88			
10000	94	92	75	99	97	84	99	99	86	103	106	86			
OVERALL	107	106	91	113	114	97	118	120	102	123	126	107			

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE 2 MEASURED SOUND PRESSURE LEVEL (DB) OCTAVE BAND										IDENTIFICATION:		

TABLE: MEASURES OF HUMAN NOISE EXPOSURE										IDENTIFICATION:	
3										OMEGA 3.2	
NOISE SOURCE/SUBJECT:										TEST 79-738-001	
(OPERATION:										RUN 01	
(F-16 AIRCRAFT IN THE (A= IDLE PWR (65% RPM)										06 APR 79	
(AF32A-25 SUPPRESSOR (B= 80% RPM										PAGE H1	
(GROUND CREW (C= MILITARY PWR (91% RPM)											
(NEAR-FIELD NOISE LEVELS (D= AFTERBURNER PWR											
LOCATION/CONDITION											
1/A	2/A	3/A	1/B	2/B	3/B	1/C	2/C	3/C	1/D	2/D	3/D
HAZARD/PROTECTION											
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DB) AT EAR											
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DB) AT EAR											
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)											
NO PROTECTION											
OASLC	187	185	90	112	113	97	117	120	102	123	125
OASLA	188	186	91	112	111	95	116	117	99	123	124
T	0	11	143	3.8	4.5	71	P	P	36	P	P
MINIMUM QPL EAR MUFFS											
OASLA*	80	78	63	88	89	72	92	95	77	97	100
T	960	960	960	240	202	960	120	71	960	50	30
AMERICAN OPTICAL 1700 EAR MUFFS											
OASLA*	74	72	58	83	85	68	88	91	73	92	95
T	960	960	960	571	404	960	240	143	960	120	71
V-51R EAR PLUGS											
OASLA*	77	76	61	84	84	67	90	91	73	96	98
T	960	960	960	480	480	960	170	143	960	60	42
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS											
OASLA*	64	62	47	71	71	55	76	78	60	83	84
T	960	960	960	960	960	960	960	960	960	571	480
H-133 GROUND COMMUNICATION UNIT											
OASLA*	82	80	65	83	84	67	88	90	72	95	97
T	679	960	960	571	480	960	240	170	960	71	58
COMMUNICATION											
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)											
PSIL	96	95	81	102	103	86	110	112	92	117	118
ANNOYANCE											
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)											
TONE CORRECTION (C IN DB)											
PNLT	124	123	108	130	127	111	129	131	113	135	138
C	3	3	3	2	1	1	0	0	0	0	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.
P ADDITIONAL EAR PROTECTION REQUIRED.

TABLE 4
TEST CONDITIONS
FOR FAR-FIELD NOISE MEASUREMENTS

F-16 Aircraft in the AF32A-25 Noise Suppressor, Ground Runup
Hill AFB Utah, 14 March 1979

Aircraft Engine Operation

Idle	Single Engine 65 % RPM 440 F, Turbine Inlet Temperature 850 LBS/HR, Fuel Flow
80% RPM	Single Engine 80 % RPM 650 F, TIT 3600 LBS/HR, FF
Military Power	Single Engine 91 % RPM 920 F, TIT 8150 LBS/HR, FF
Afterburner Power	Single Engine 91 % RPM 920 F, TIT 38,000 LBS/HR, FF

Meteorology

Temperature	12 C
Bar Pressure	.643 M Hg
Rel Humidity	32 %
Wind — Speed	4 M/Sec (8 Kt)
— Direction	110 Deg

TABLE 1 MEASURED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 100 METERS																			
NOISE SOURCE/SUBJECT:																			
F-16 AIRCRAFT IN THE																			
AF32A-25 SUPPRESSOR																			
J85-21 ENGINE																			
FAR-FIELD NOISE																			
OPERATION:																			
IDLE POWER (65% RPM)																			
SINGLE ENGINE																			
GROUND RUNUP (SUPPRESSED)																			
TEMP = 12 C																			
BAR PRESS = .643 M HG																			
REL HUMID = 32 %																			
METEOROLOGY:																			
RUN 01																			
22 MAR 79																			
PAGE 2																			
IDENTIFICATIONS:																			
OMEGA 1.4																			
TEST 79-738-001																			
FREQ (HZ)																			
ANGLE (DEGREES)																			
75 76 78 76 75 73 73 72 73 76 71 71 69 71 69 71 68 72																			
25	57	58	58	57	59	60	61	62	58	65	62	64	60	63	61	60	59	56	58
31.5	59	60	57	57	61	61	61	61	60	64	61	61	57	61	61	58	60	58	58
40	58	61	60	61	64	62	62	63	60	66	62	62	59	61	60	60	61	59	59
50	61	59	61	59	60	60	62	62	59	67	59	60	57	59	59	56	59	56	58
63	63	61	67	61	61	58	60	59	60	66	61	60	60	57	56	57	56	56	60
80	62	65	66	66	62	60	60	61	61	67	63	60	61	60	57	59	62	57	70
100	63	61	64	64	66	65	66	60	61	66	64	59	60	66	64	66	67	64	64
125	65	63	61	61	63	60	60	60	59	66	61	59	58	58	58	60	58	56	57
160	62	62	60	61	62	62	61	61	60	64	58	58	56	55	53	54	58	54	53
200	62	60	59	55	58	53	53	54	53	59	55	53	51	50	50	48	49	46	48
250	61	58	59	55	58	53	53	53	52	58	51	51	48	49	48	47	47	46	47
315	57	59	59	54	56	53	52	50	51	53	47	47	46	45	43	44	45	43	45
400	55	57	59	53	55	51	50	47	47	50	45	44	45	44	43	45	46	44	47
500	56	58	60	54	55	54	52	48	48	48	45	43	46	45	44	45	46	43	46
630	63	62	71	66	63	64	57	54	56	56	51	47	50	43	43	45	47	44	44
800	58	59	62	56	57	53	52	48	48	48	44	41	47	44	43	46	47	44	42
1000	55	58	60	54	55	53	52	47	48	45	43	40	46	42	42	45	45	43	41
1250	55	59	63	57	56	54	55	49	52	45	46	40	45	39	41	42	45	41	39
1600	55	59	62	56	56	52	50	50	54	44	44	40	42	37	39	38	42	37	35
2000	56	60	61	56	55	51	48	49	50	44	41	37	37	34	34	33	36	33	32
2500	68	70	71	71	68	65	62	65	59	55	51	52	53	50	45	44	50	41	44
3150	61	65	66	65	62	59	56	61	63	53	47	48	49	44	40	39	46	35	40
4000	58	64	64	60	57	54	53	53	55	46	41	38	39	38	37	35	35	33	33
5000	53	58	59	54	52	48	47	48	50	44	38	34	35	34	32	31	30	29	29
6300	49	56	55	49	47	45	42	43	44	36	32	28	28	27	26	25	25	26	23
8000	44	51	50	44	42	39	37	39	38	31	28	25	26	25	24	23	24	26	21
10000	42	49	48	41	39	36	33	35	32	28	25	23	23	23	22	22	21	26	20
OVERALL	75	76	78	76	75	73	73	72	73	76	71	71	69	71	69	70	71	68	72

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																				IDENTIFICATION:	
5		1/3 OCTAVE BAND																			
		DISTANCE = 100 METERS																			
																				OMEGA 1.4	
																				TEST 79-738-001	
																				RUN 02	

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 100 METERS																			
NOISE SOURCE/SUBJECT:																			
F-16 AIRCRAFT IN THE																			
AF32A-25 SUPPRESSOR																			
J85-21 ENGINE																			
FAR-FIELD NOISE																			
OPERATION:										METEOROLOGY:									
MILITARY POWER (91% RPM)										TEMP = 12 C									
SINGLE ENGINE										BAR PRESS = .643 M HG									
GROUND RUNUP (SUPPRESSED)										REL HUMID = 32 %									
										PAGE 2									
FREQ (HZ)																			
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180																			
25 86 83 84 84 83 83 82 79 81 82 81 83 85 84 85 86 87 87 86																			
31.5 84 85 84 83 81 80 77 76 77 77 79 79 83 83 83 86 86 86 87																			
40 86 85 82 81 80 79 77 76 74 76 76 78 79 81 82 84 84 84 85																			
50 86 85 82 81 80 79 78 74 79 74 77 75 78 78 77 78 81 84 84																			
63 88 80 78 78 78 78 78 76 77 76 78 82 82 82 81 78 80 80 83																			
80 87 85 82 80 78 77 75 73 73 73 75 78 80 81 82 81 83 81 82																			
100 84 84 82 80 78 77 74 73 74 74 79 83 81 80 83 82 81 84 86																			
125 81 81 80 78 76 75 73 74 73 73 74 78 81 78 78 80 79 82 84																			
150 77 77 81 78 76 73 74 74 71 73 76 81 82 80 76 79 78 77 80																			
200 78 77 80 78 76 74 73 72 69 78 73 76 77 72 72 71 70 71 71																			
250 78 76 81 79 76 74 73 73 72 70 72 72 70 72 70 73 75 74 74																			
315 76 75 78 76 75 74 71 72 71 71 69 67 69 67 68 69 72 73 76																			
400 74 74 78 76 74 72 71 70 69 70 69 67 67 68 70 69 72 73 73																			
500 70 72 76 74 72 70 69 69 66 64 63 62 62 61 63 62 61 64 66																			
630 69 73 76 73 70 68 66 67 65 64 61 61 59 58 61 60 63 62																			
800 72 75 75 72 70 67 65 66 65 65 62 62 60 58 59 58 60 58 58																			
1000 69 72 73 70 67 64 63 63 61 62 59 59 58 56 57 56 57 59 58																			
1250 67 71 71 67 64 61 62 61 58 61 57 54 53 54 55 55 55 56 54																			
1500 67 71 71 67 64 61 64 62 59 60 58 55 54 53 54 54 56 56 53																			
2000 67 70 70 67 63 60 63 63 59 61 57 55 52 52 54 53 54 54 52																			
2500 65 67 68 64 61 58 62 61 56 59 54 51 49 49 51 50 51 49 49																			
3150 63 66 66 62 58 55 59 57 53 55 52 49 46 48 49 48 49 48																			
4000 62 66 65 61 57 53 56 55 52 52 51 47 45 45 46 46 45 46 45																			
5000 58 63 62 58 54 50 53 50 47 48 45 43 40 41 42 42 41 41 40																			
6300 55 59 60 55 51 47 50 46 43 45 41 39 37 38 38 38 37 37 37																			
8000 49 53 54 50 46 42 44 40 37 39 37 37 37 37 37 37 37 37 37																			
10000 47 51 52 48 44 40 42 38 36 37 37 37 37 37 37 37 37 37 37																			
OVERALL 94 93 93 91 90 89 87 86 87 87 88 90 91 91 91 92 93 93 94																			
LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.																			

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE 1		MEASURED SOUND PRESSURE LEVEL (DB)																	IDENTIFICATION:	
5		1/3 OCTAVE BAND																	OMEGA 1.4	
		DISTANCE = 100 METERS																	TEST 79-738-001	
NOISE SOURCE/SUBJECT:		OPERATION:																	RUN 04	
F-16 AIRCRAFT IN THE		AFTERBURNER POWER																	TEMP = 12 C	
AF32A-25 SUPPRESSOR		SINGLE ENGINE																	BAR PRESS = .643 M HG	
J85-21 ENGINE		GROUND RUNUP (SUPPRESSED)																	REL HUMID = 32 %	
FAR-FIELD NOISE																			PAGE 2	
FREQ		ANGLE (DEGREES)																		
(HZ)		0	18	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	91	89	89	89	89	88	88	85	84	84	85	85	83	83	85	86	88	87	89	88
31.5	90	89	89	88	88	86	85	82	82	83	83	83	83	82	85	85	88	89	91	89
40	93	91	90	88	88	85	84	84	83	81	83	81	81	84	85	86	87	89	89	91
50	90	89	89	88	88	85	82	82	79	80	80	78	80	79	81	82	85	88	89	90
63	89	86	85	85	83	82	82	80	81	79	79	78	80	77	80	78	81	82	85	87
80	88	88	87	85	83	81	83	83	82	80	82	84	85	83	83	84	82	83	85	88
100	90	91	89	84	82	82	82	80	79	80	82	83	85	85	85	84	83	82	87	89
125	91	88	87	86	82	83	83	83	79	78	80	83	84	84	82	79	77	83	85	89
160	86	83	83	82	80	79	80	78	76	76	77	81	83	83	82	79	76	79	77	80
200	83	81	82	83	81	79	78	77	76	75	77	82	80	77	75	74	73	74	74	75
250	81	79	86	86	82	80	77	77	77	75	77	82	80	77	75	74	72	75	76	77
315	80	80	82	82	81	81	81	78	76	76	78	79	76	74	78	74	73	77	80	83
400	83	82	84	82	80	81	80	76	76	74	75	73	73	74	74	74	73	76	79	80
500	86	83	83	81	79	80	78	73	73	71	75	70	72	73	76	74	73	76	79	80
630	81	79	80	80	76	76	73	72	71	69	71	68	69	68	70	69	69	72	72	75
800	79	81	80	79	74	75	72	71	69	70	70	69	70	68	71	68	68	71	70	73
1000	76	79	79	77	72	71	68	67	66	66	66	65	66	64	66	64	65	66	66	66
1250	75	79	79	77	70	70	66	67	64	63	63	62	62	61	61	61	63	64	64	65
1600	75	80	77	75	68	69	66	66	67	63	64	62	63	61	61	62	62	64	64	64
2000	74	78	76	74	67	68	65	65	66	63	63	62	63	60	62	60	61	62	62	60
2500	73	76	75	73	66	67	63	63	64	61	60	59	59	58	60	58	59	59	59	59
3150	70	74	72	70	62	64	60	60	61	58	58	55	56	55	55	54	57	56	56	56
4000	70	73	72	70	61	63	59	60	57	57	57	53	53	52	52	51	53	54	54	53
5000	65	68	66	66	57	59	54	54	52	52	51	48	49	48	47	47	48	49	49	47
6300	61	64	62	61	52	54	50	51	49	49	47	47	47	47	47	47	47	47	44	42
8000	55	59	57	56	47	49	47	47	47	47	47	47	47	47	47	47	47	47	47	42
10000	50	54	53	51	43	47	47	47	47	47	47	47	47	47	47	47	47	47	47	42
OVERALL	100	99	98	97	95	94	93	93	92	91	92	93	94	93	93	93	95	96	97	99

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

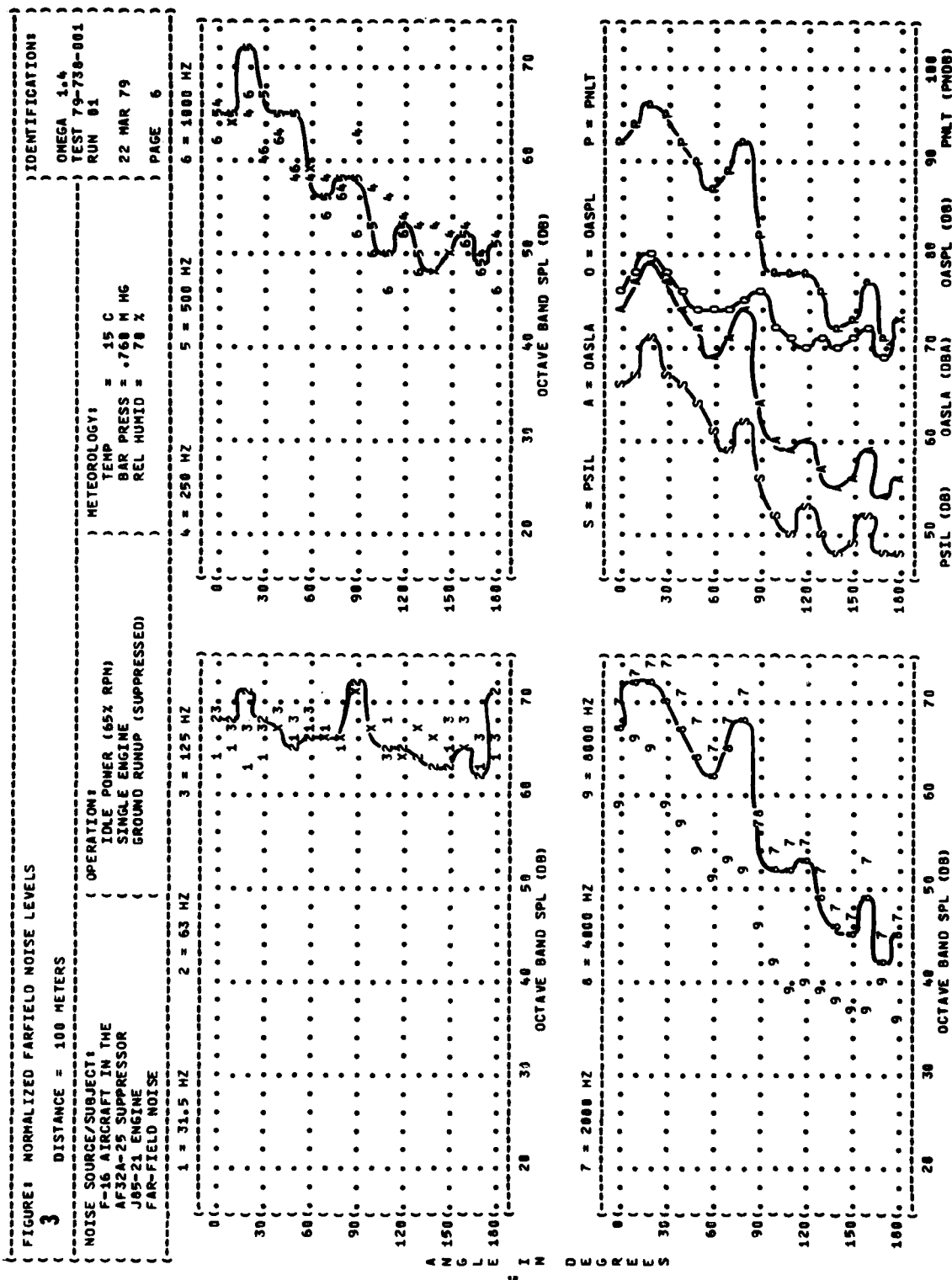


FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

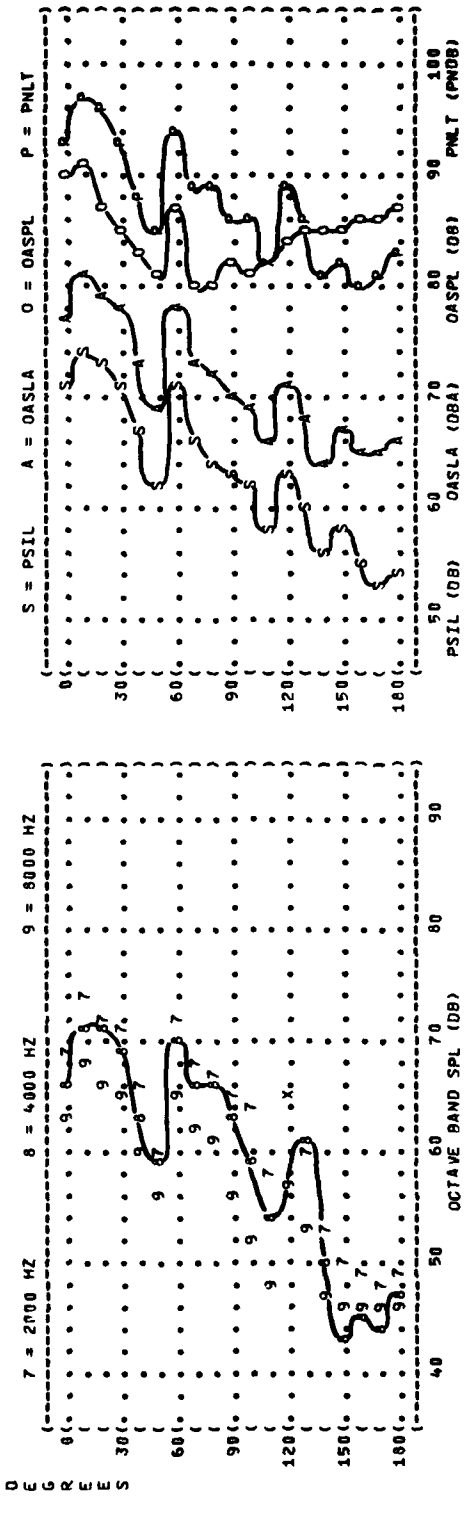
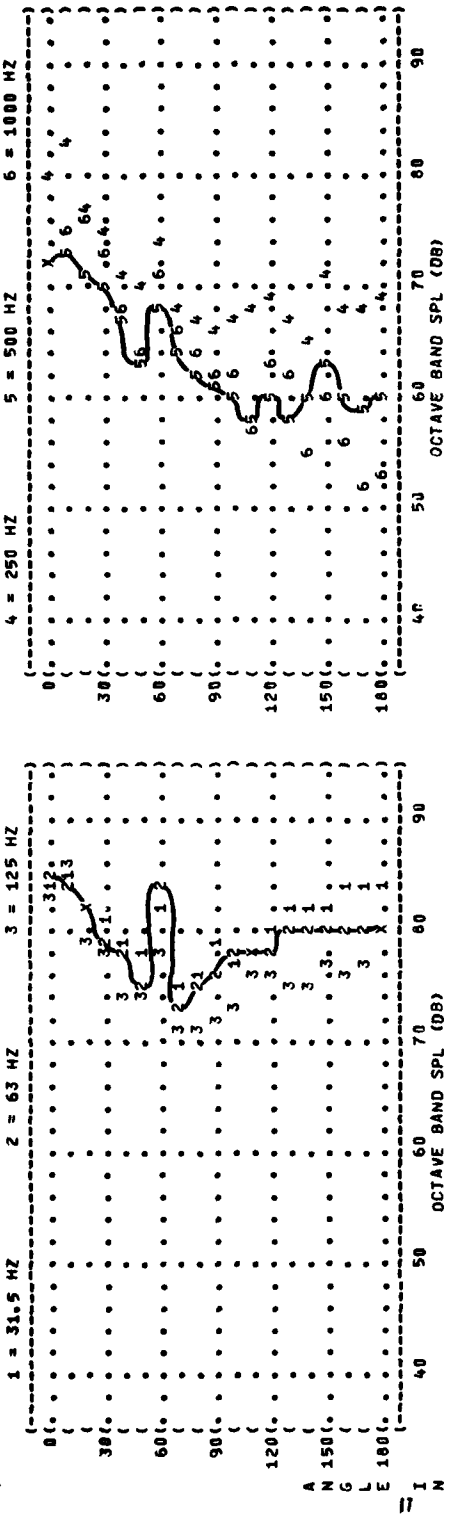
3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT: F-16 AIRCRAFT IN THE AF32A-25 SUPPRESSOR J05-21 ENGINE FAR-FIELD NOISE

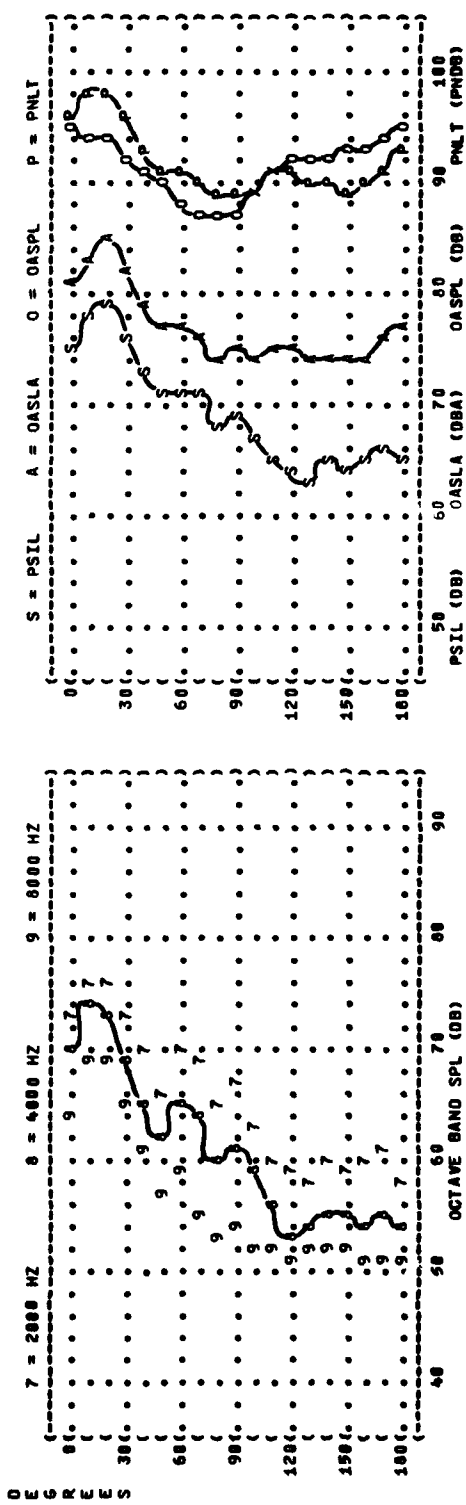
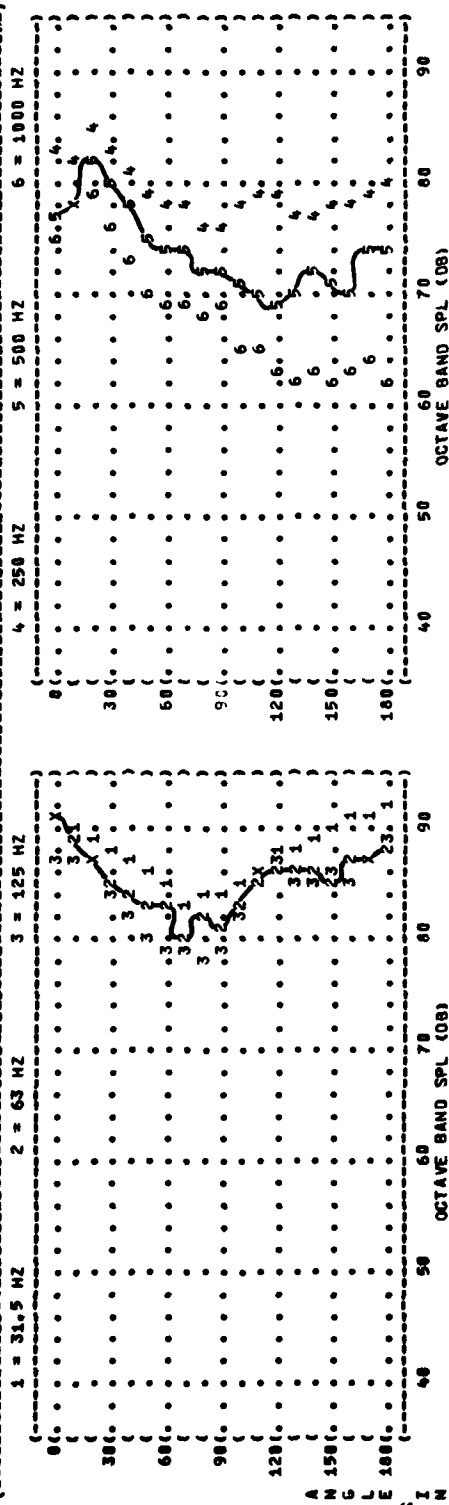
OPERATION: 80% RPM SINGLE ENGINE GROUND RUNUP (SUPPRESSED)

METEOROLOGY: TEMP = 15 C BAR PRESS = .760 M HG REL HUMID = 70 %

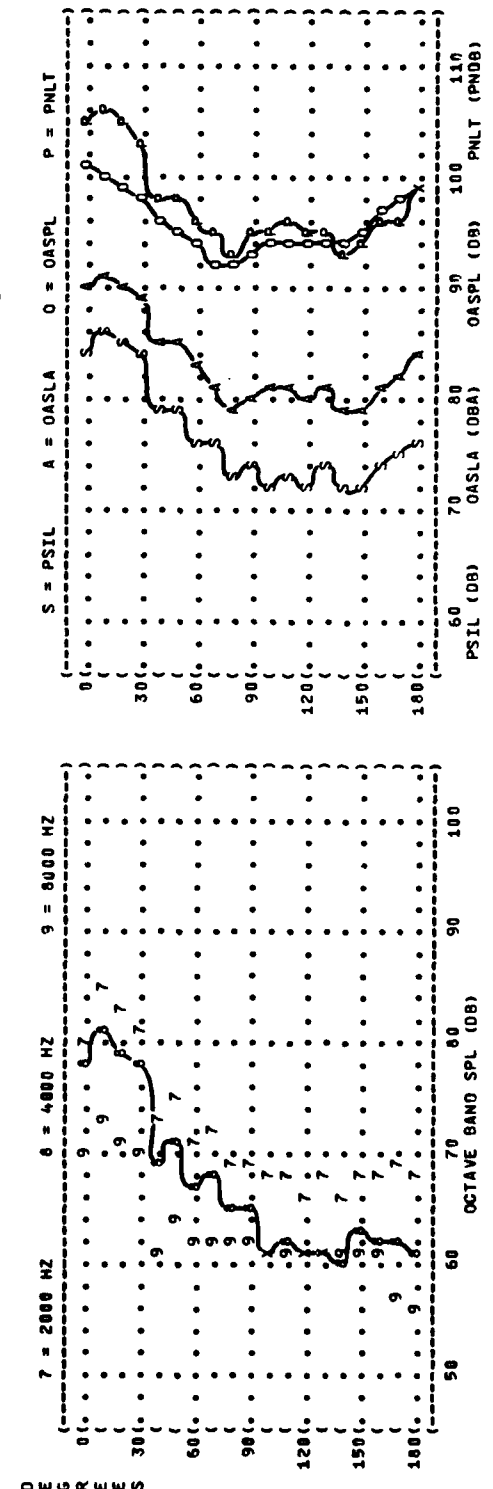
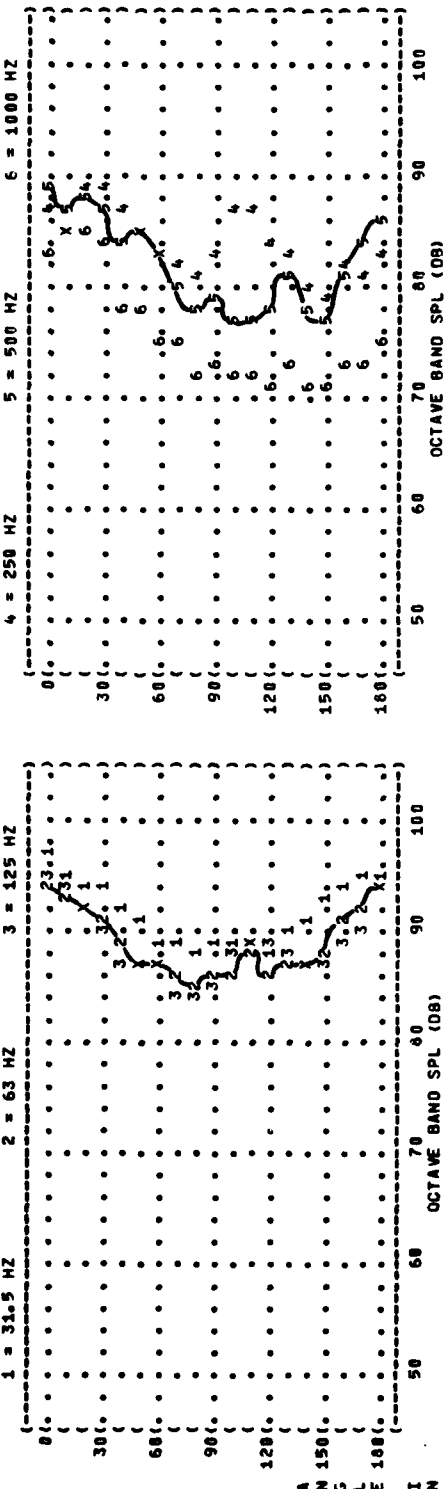
IDENTIFICATIONS: OMEGA 1.4 TEST 79-730-001 RUN 02 22 MAR 79 PAGE 6



(FIGURE: NORMALIZED FARFIELD NOISE LEVELS)
 (3)
 (DISTANCE = 100 METERS)
 (NOISE SOURCE/SUBJECT:)
 (F-16 AIRCRAFT IN THE)
 (AF32A-28 SUPPRESSOR)
 (J48-21 ENGINE)
 (FAR-FIELD NOISE)
 (OPERATION:)
 (MILITARY POWER (91X RPM))
 (SINGLE ENGINE)
 (GROUND RUNUP (SUPPRESSED))
 (METEOROLOGICAL:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 79-738-001)
 (RUN 03)
 (22 MAR 79)
 (PAGE 6)



(FIGURE: NORMALIZED FARFIELD NOISE LEVELS
 (3
 (DISTANCE = 100 METERS
 (NOISE SOURCE/SUBJECT: (OPERATION: (METEOROLOGY: (OMEGA 1.4
 (F-16 AIRCRAFT IN THE (AFTERBURNER POWER () TEST 79-738-001
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE () RUN 04
 (J89-21 ENGINE (GROUND RUNUP (SUPPRESSED) () 22 MAR 79
 (FAR-FIELD NOISE () REL HUMID = 70 %
 () PAGE 6
 ()



(PSIL (DB) A = OASLA O = OASPL P = PNLT
 (60 70 80 90 100 110
 (PNLT (PN08)


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))IDENTIFICATION:
))
))
))OMEGA 1.4
))TEST 79-730-001
))RUN 01
))
))22 MAR 79
))
))PAGE 13
))

```

```

) METEOROLOGY:
)
) TEMP = 15 C
) BAR PRESS = .760 M HG
) REL HUMID = 70 %
)
)

```

RUN 01

15 C)
760 M HG) 22 MAR 79
70 Z)

PAGE 13



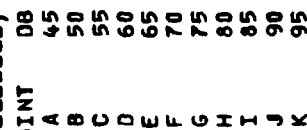
420 JE IN DECEMBER


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( FIGURE: OVERALL SOUND PRESSURE LEVEL {OASPL}
( 4
( EQUAL LEVEL CONTOURS (DB)
(
(-----)
( NOISE SOURCE/SUBJECT: ( OPERATION: ( METEOROLOGY:
( F-16 AIRCRAFT IN THE ( MILITARY POWER (91% RPM) ) TEMP = 15 C
( AF32A-25 SUPPRESSOR ( SINGLE ENGINE ) ) BAR PRESS = .760 H HG
( J85-21 ENGINE ( GROUND RUNUP (SUPPRESSED) ) ) REL HUMID = 70 %
( FAR-FIELD NOISE ( ) )
(
( IDENTIFICATION:
( )
( ) OMEGA 1.4
( ) TEST 79-738-001
( ) RUN 03
( ) 22 MAR 79
( ) PAGE 13

```

TEST 75
RUN 03
22 MAR 7
PAGE 13



DISTANCE FROM SOURCE (METERS)

IDENTIFICATION:

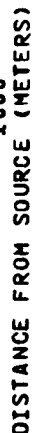
OMEGA 1.4

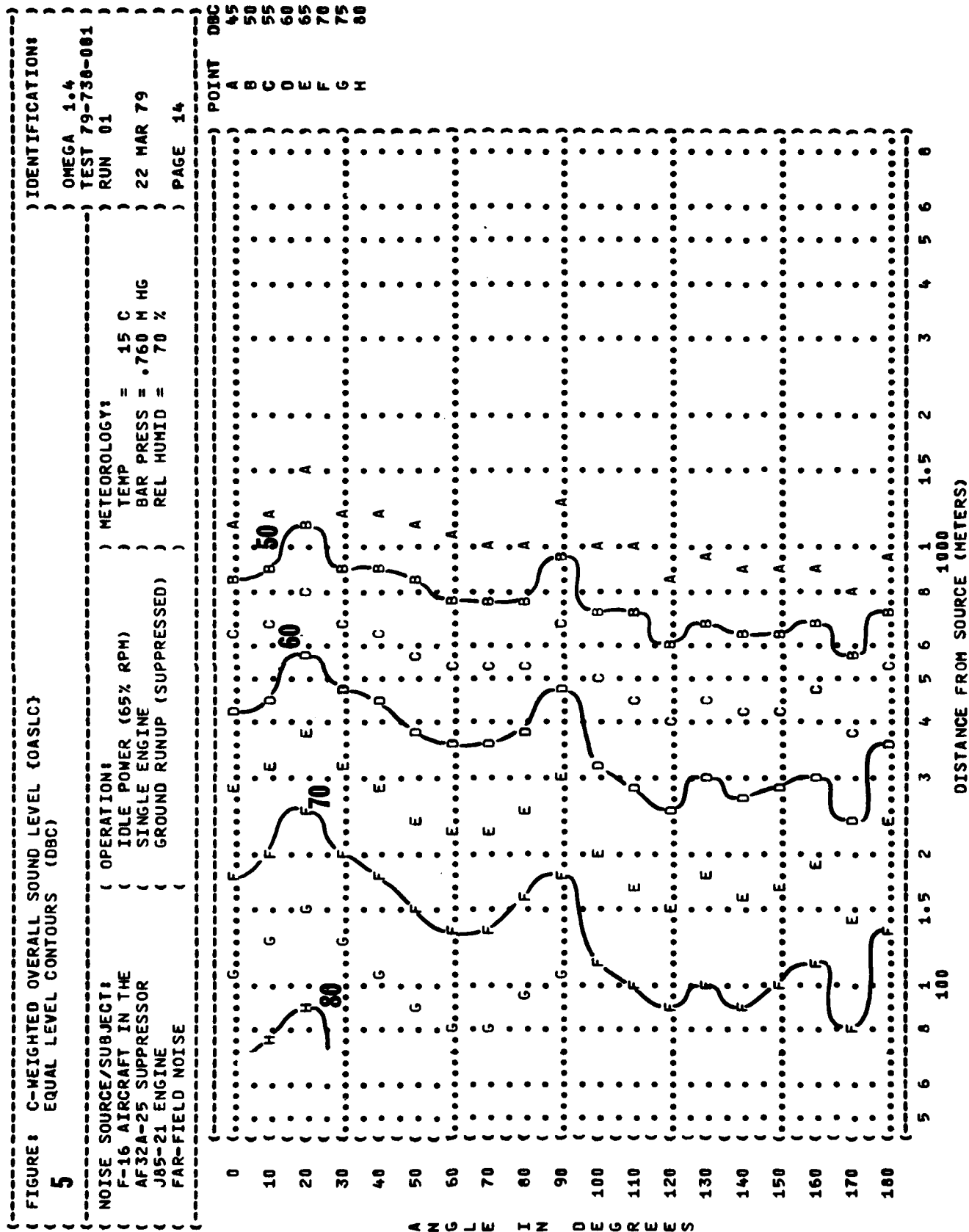
0 METEOROLOGY:

TEMP = 15 C

BAR PRESS = .760 M HG

REL HUMID = 70 %





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( ) FIGURE: C-WEIGHTED OVERALL SOUND LEVEL {OASLC}
( ) EQUAL LEVEL CONTOURS (DBC)
( ) 5
( ) -----
( ) NOISE SOURCE/SUBJECT: ( OPERATION: ) METEOROLOGY:
( ) F-16 AIRCRAFT IN THE ( 80% RPM ) TEMP = 15 C
( ) AF32A-25 SUPPRESSOR ( SINGLE ENGINE ) BAR PRESS = .760 H HG
( ) J85-21 ENGINE ( GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 %
( ) FAR-FIELD NOISE ( )
( ) IDENTIFICATION: ) OMEGA 1.4
( ) TEST 79-738-001
( ) RUN 02
( ) 22 MAR 79
( ) PAGE 14
```

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 H MG
REL HUMID = 70 %

POINT

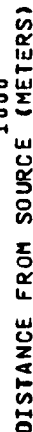


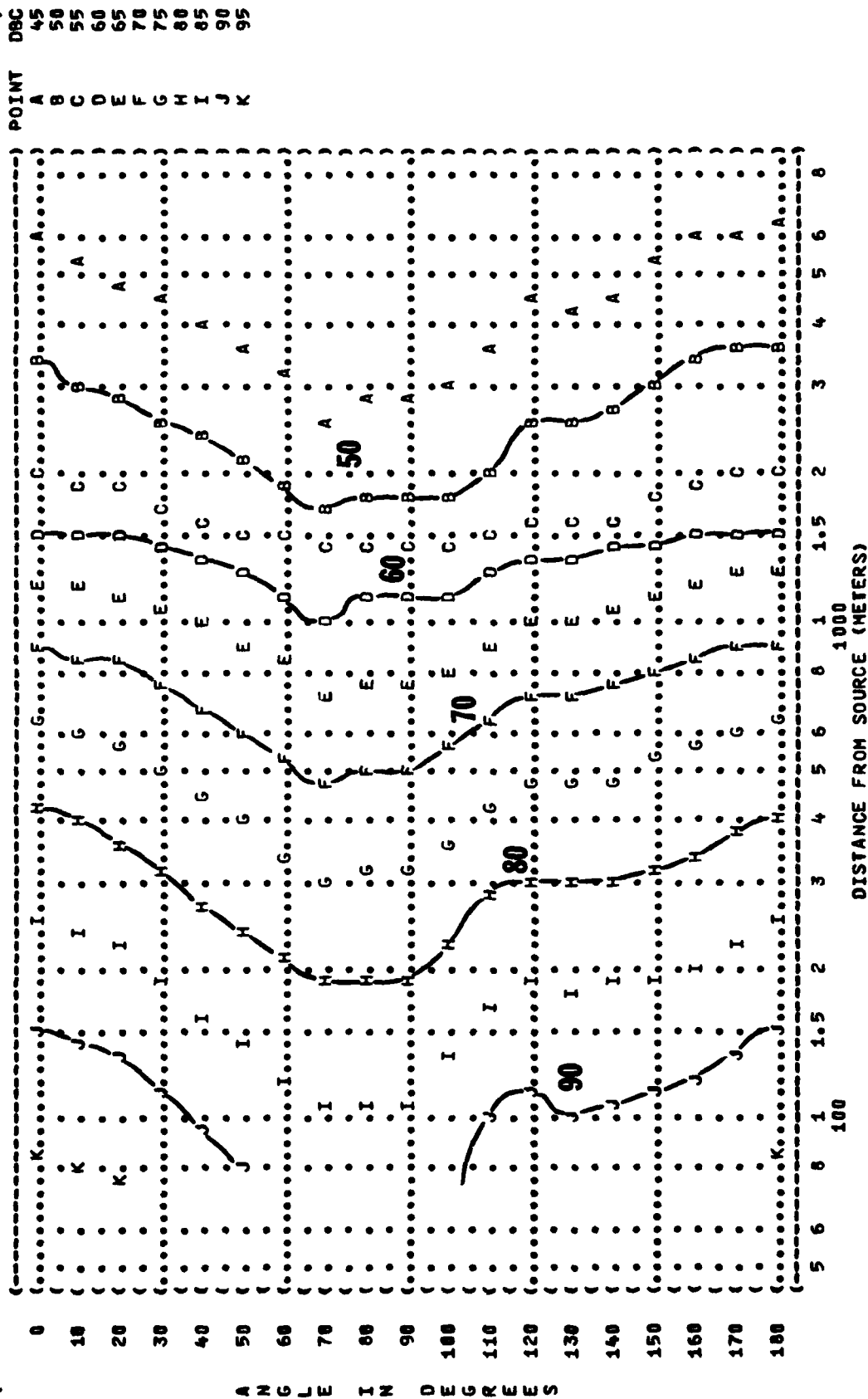
FIGURE: G-WEIGHTED OVERALL SOUND LEVEL (OASLC)
5 EQUAL LEVEL CONTOURS (DBC)

NOISE SOURCE/SUBJECT:
F-16 AIRCRAFT IN THE
AF32A-25 SUPPRESSOR
J45-21 ENGINE
FAR-FIELD NOISE

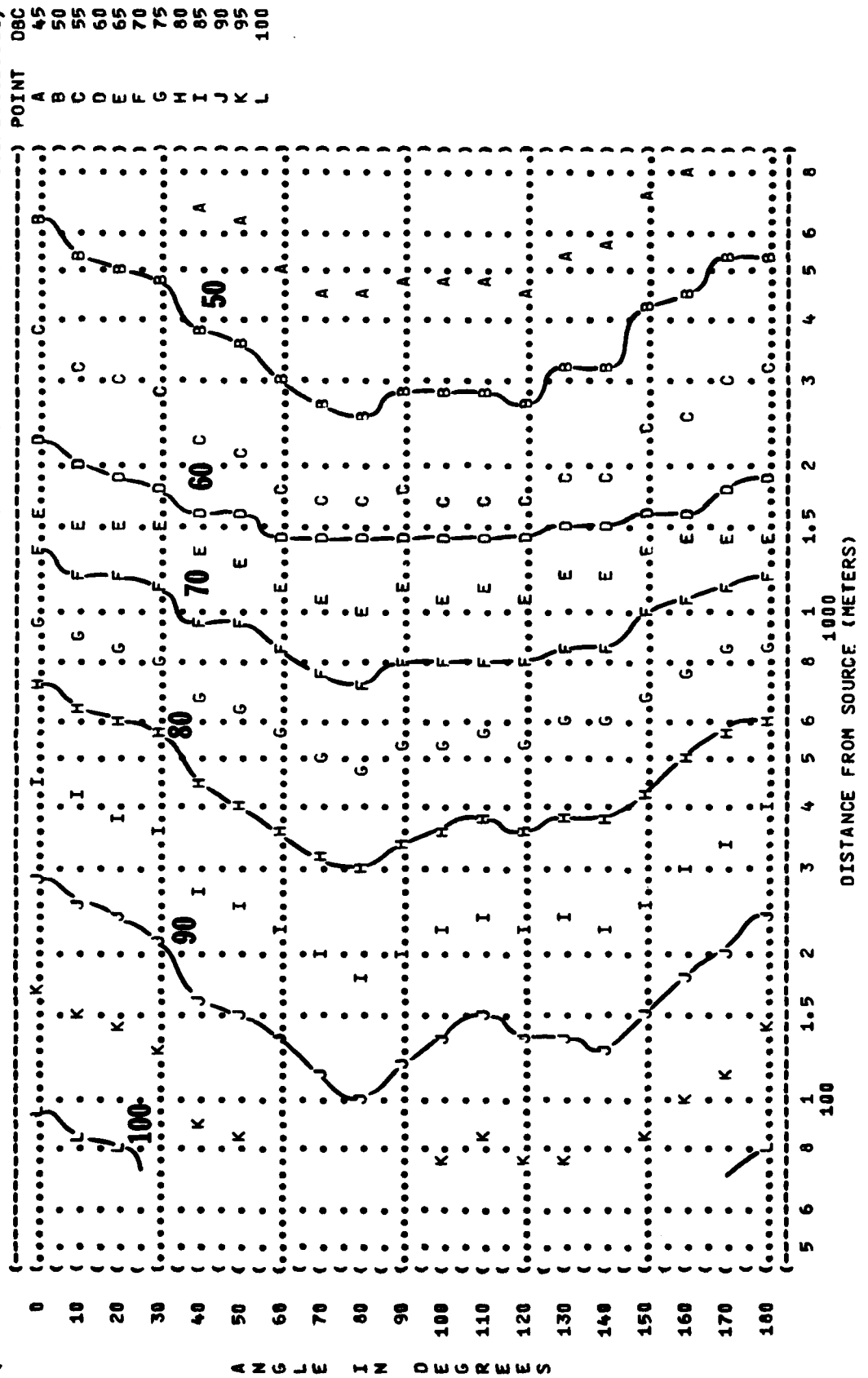
OPERATION:
MILITARY POWER (91% RPM)
SINGLE ENGINE
GROUND RUNUP (SUPPRESSED)

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 H HG
REL HUMID = 70 %

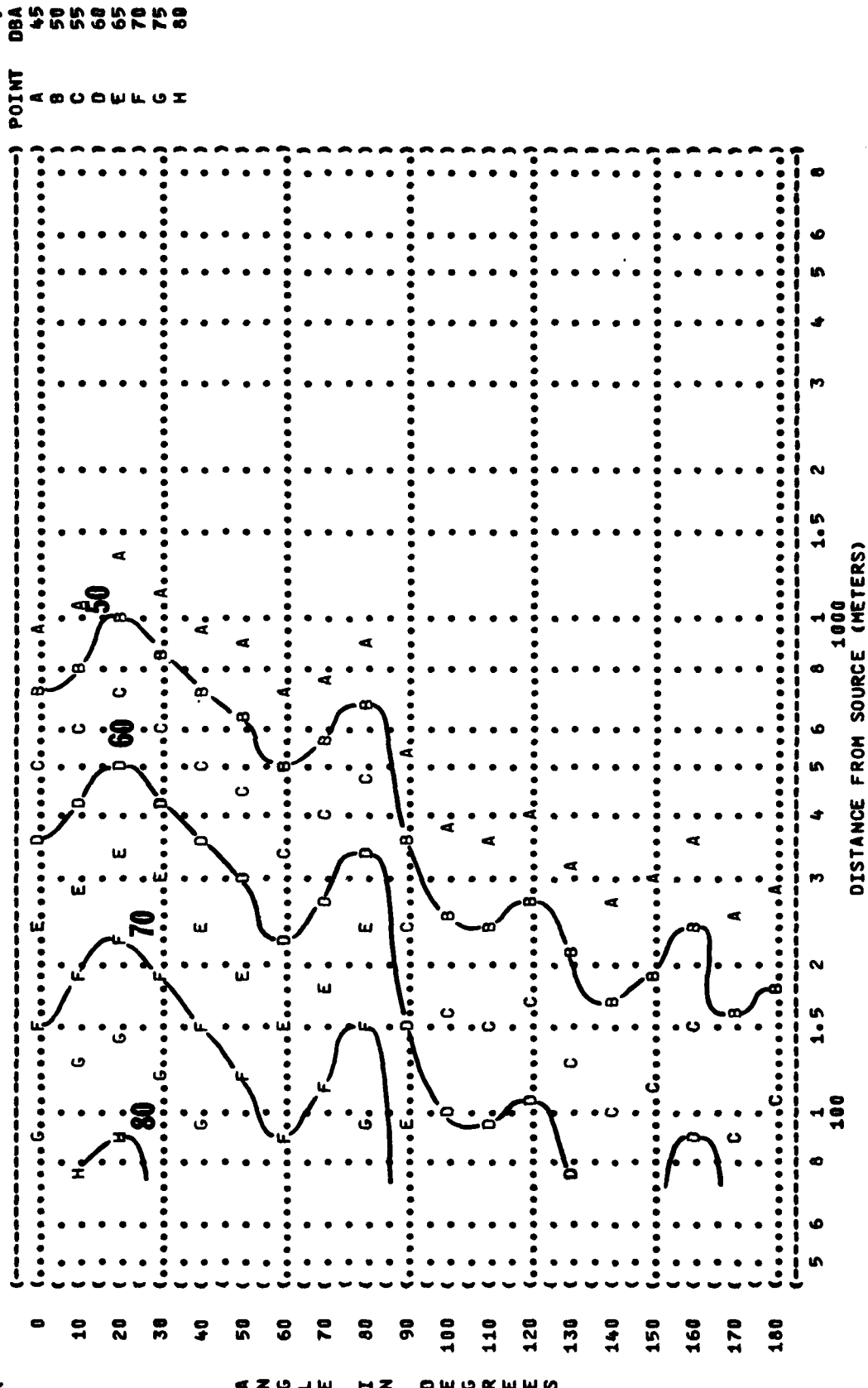
IDENTIFICATION:
OMEGA 1.4
TEST 79-738-001
RUN 03
22 MAR 79
PAGE 14



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(-----)
( FIGURE: C-WEIGHTED OVERALL SOUND LEVEL {OASLC} )
(      5    EQUAL LEVEL CONTOURS   (DBC) )
(-----)
( NOISE SOURCE/SUBJECT: )
( F-16 AIRCRAFT IN THE )
( AF32A-25 SUPPRESSOR )
( J85-21 ENGINE )
( FAR-FIELD NOISE )
(-----)
( OPERATION: )
( AFTERBURNER POWER )
( SINGLE ENGINE )
( GROUND RUNUP (SUPPRESSED) )
( )
( METEOROLOGY: )
( TEMP = 15 C )
( BAR PRESS = .760 H MG )
( REL HUMID = 70 % )
( )
( IDENTIFICATION: )
( )
( OMEGA 1.4 )
( TEST 79-738-001 )
( RUN 04 )
( )
( PAGE 14 )
(-----)
```



(FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OASLA)
 (6 EQUAL LEVEL CONTOURS (DBA)
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 79-738-001
 () RUN 01
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () 22 MAR 79
 () PAGE 15
 () NOISE SOURCE/SUBJECT:
 () OPERATION:
 () F-16 AIRCRAFT IN THE
 () IDLE POWER (65% RPM)
 () AF32A-25 SUPPRESSOR
 () SINGLE ENGINE
 () J85-21 ENGINE
 () GROUND RUNUP (SUPPRESSED)
 () FAR-FIELD NOISE
 ()



A N G L E I N D E G R E E S

**FIGURE: PERCEIVED NOISE LEVEL, TONE CORRECTED {PNLT}
EQUAL LEVEL CONTOURS (PN08)**

2

OMEGA 1.4

TEST 79-738-001

RUN 01

TEMP = 15 C

BAR PRESS = .760 M HG 1 22 MAR 79

REL HUMID = 70 %

PAGE 16

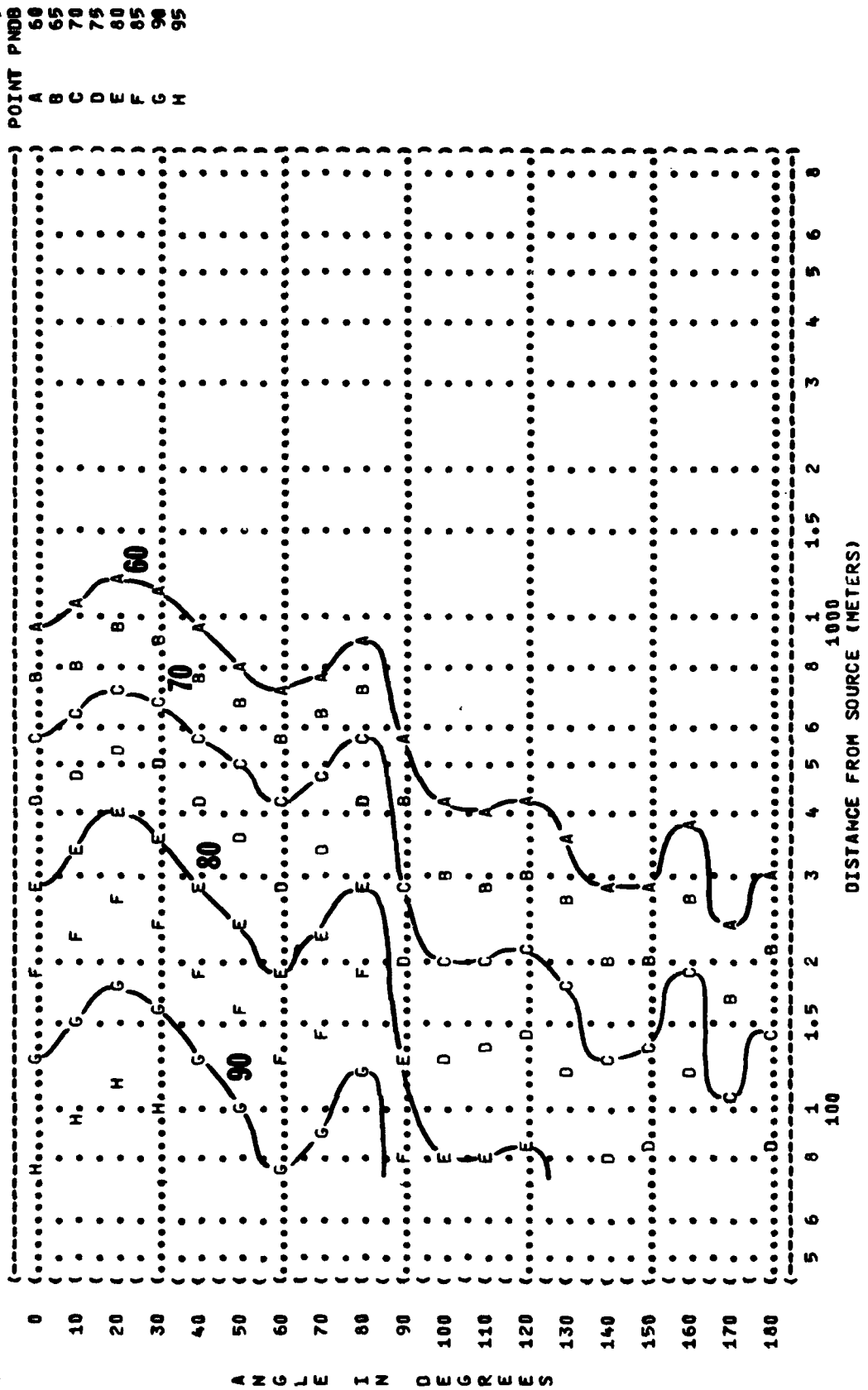
NOISE SOURCE/SUBJECT: (OPERATION:

F-16 AIRCRAFT IN THE (IDLE POWER (65% RPM)

AF32A-25 SUPPRESSOR (SINGLE ENGINE

J85-21 ENGINE

FAR-FIELD NOISE

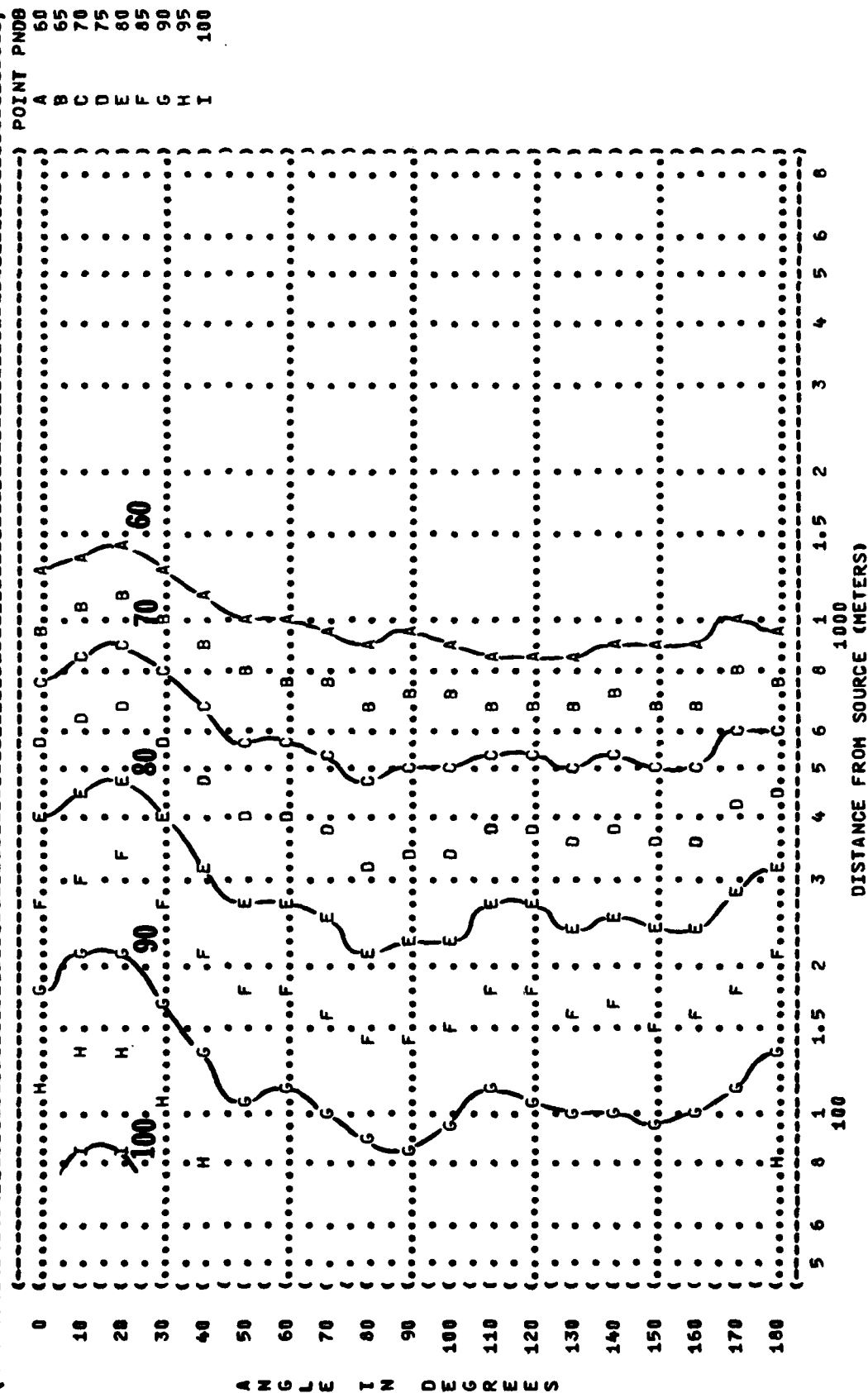


1

**FIGURE: PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT)
7
EQUAL LEVEL CONTOURS (PNOB)**

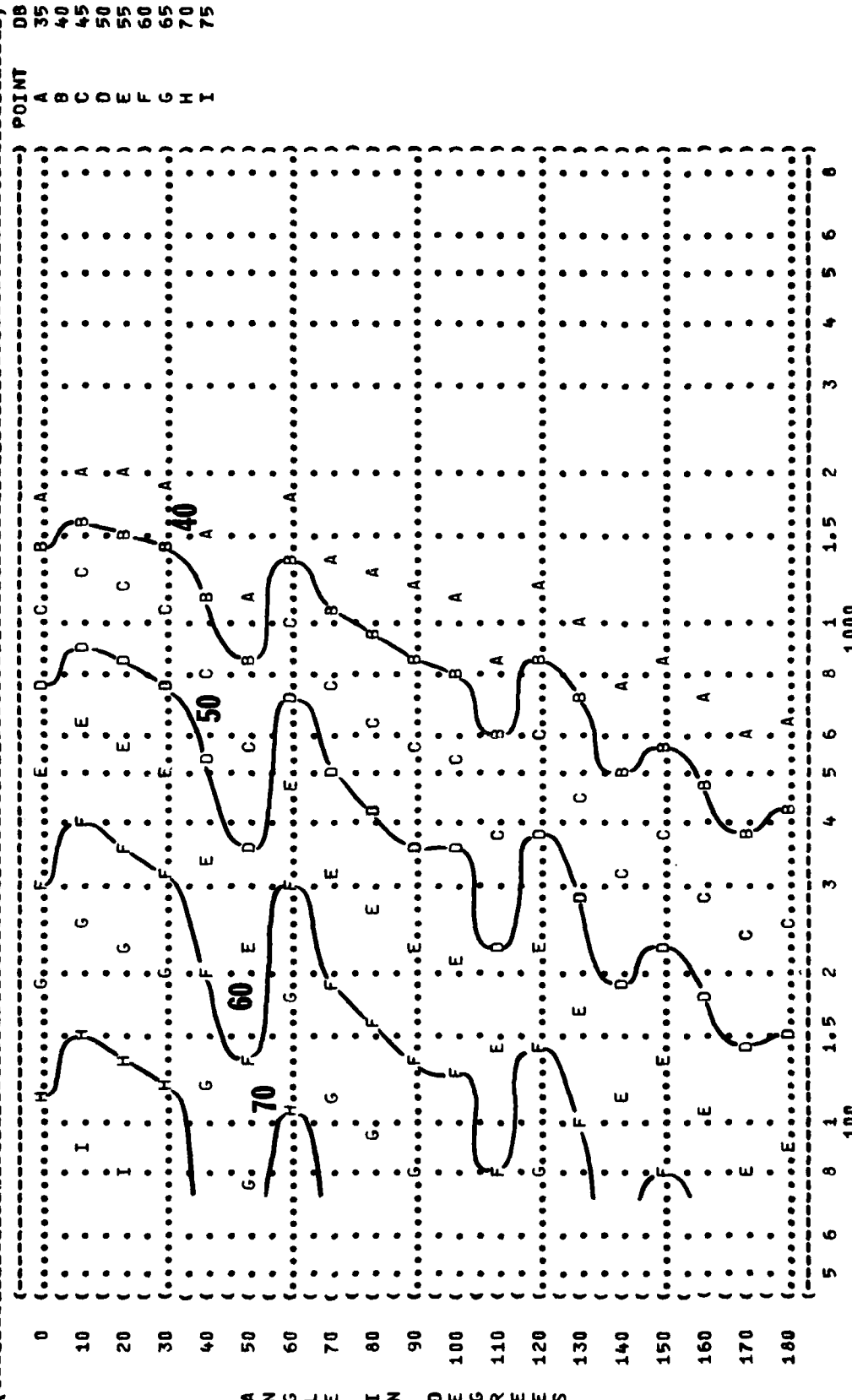
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IDENTIFICATION:
) )
) OMEGA 1.4
) )
) TEST 79-736-001
) )
) RUN 03
) )
) )
) 22 MAR 79
) )
) )
) PAGE 16
)
```

NOISE SOURCE/SUBJECT:	(OPERATION:) METEOROLOGY:
F-16 AIRCRAFT IN THE	(MILITARY POWER (91% RPM)) TEMP = 15 C
AF32A-25 SUPPRESSOR	(SINGLE ENGINE) BAR PRESS = .760 M HG
J85-21 ENGINE	(GROUND RUNUP (SUPPRESSED)) REL HUMID = 70 %



1

(FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
 (8 EQUAL LEVEL CONTOURS (DB)
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 79-736-001
 () RUN 02
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () 22 MAR 79
 () PAGE 17
 ()



DISTANCE FROM SOURCE (METERS)

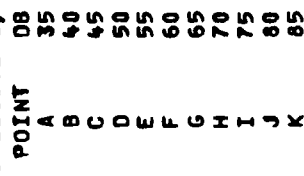
IDENTIFICATION:

OMEGA 1 4

00 METEOROLOGY:
00 TEMP
00 BAR PRESS
00 REL HUMID

TEOROLOGY: = 15 C HG
TEMP = .760 M HG
BAR PRESS = 70 %
REL HUMID =

PAGE 17



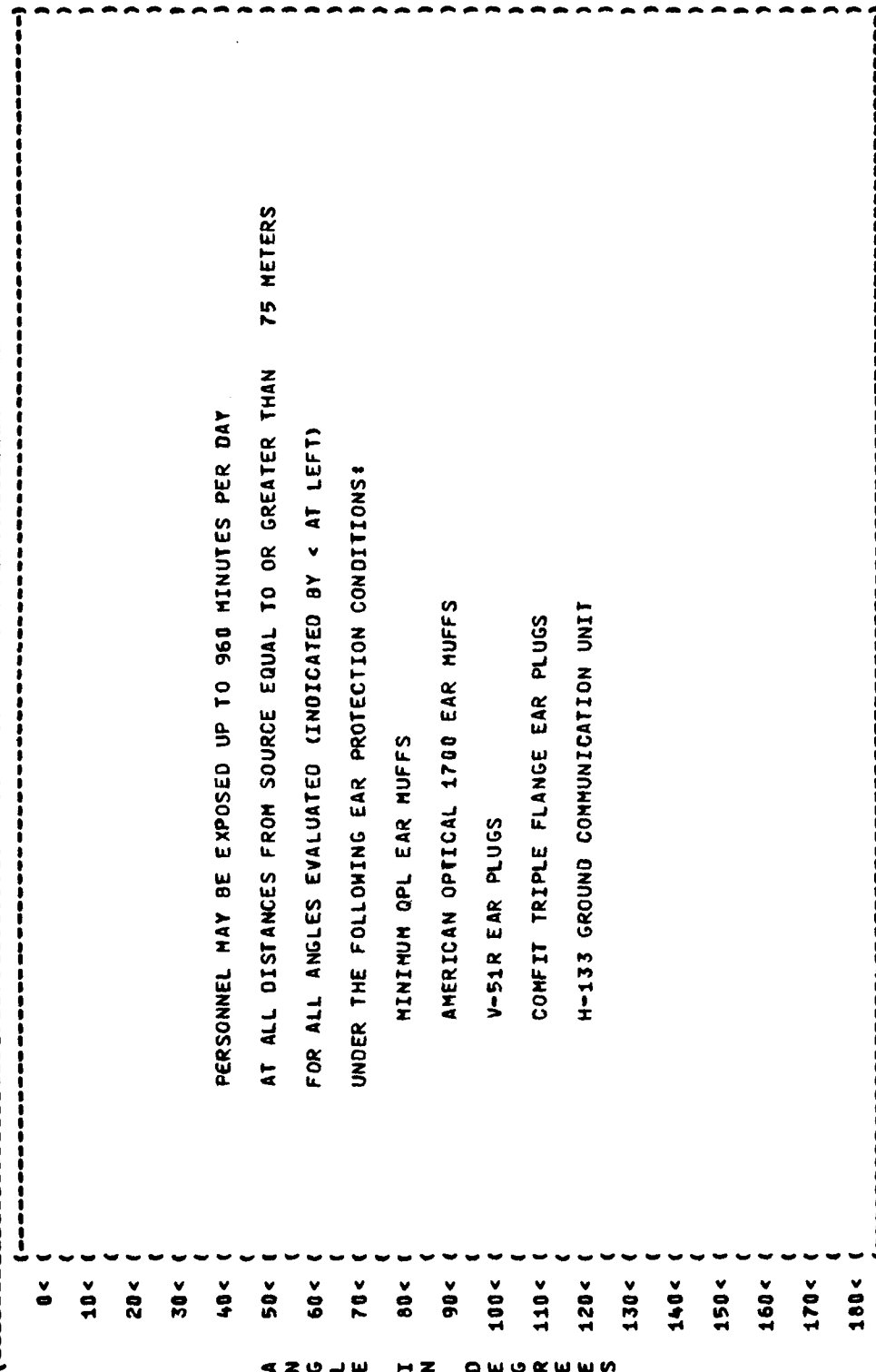
DISTANCE FROM SOURCE (METERS)

426 JE IN DECEMBER

FIGURE 1 MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)

IDENTIFICATION: OMEGA 1.4
TEST 79-730-001
RUN 01

NOISE SOURCE/SUBJECT: METEOROLOGY: TEMP = 15 C
F-16 AIRCRAFT IN THE IDLE POWER (65% RPM)
AF32A-25 SUPPRESSOR SINGLE ENGINE BAR PRESS = .760 M HG
J85-21 ENGINE GROUND RUNUP (SUPPRESSED) REL HUMID = 70 %
FAR-FIELD NOISE



PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY
AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS

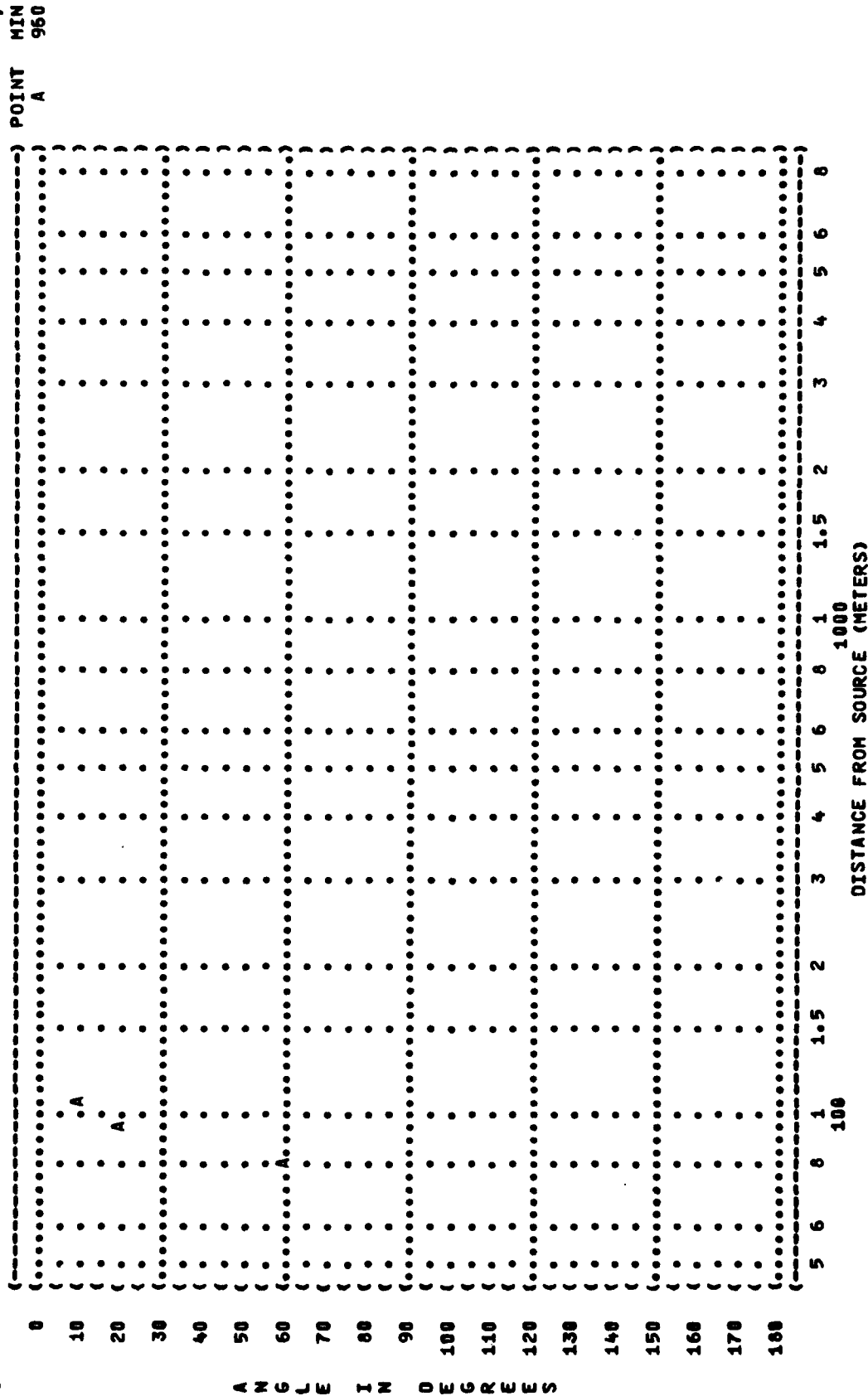
FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)

UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

- MINIMUM QPL EAR MUFFS
- AMERICAN OPTICAL 1700 EAR MUFFS
- V-51R EAR PLUGS
- COMFIT TRIPLE FLANGE EAR PLUGS
- H-133 GROUND COMMUNICATION UNIT

DISTANCE FROM SOURCE (METERS)

(FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)) IDENTIFICATION:)
 ((9 EQUAL TIME CONTOURS (MINUTES)))
 ((NO PROTECTION))
 ((NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:))
 ((F-16 AIRCRAFT IN THE (80% RPM) TEMP = 15 C))
 ((AF32A-25 SUPPRESSOR (SINGLE ENGINE) BAR PRESS = .760 M HG))
 ((J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)) REL HUMID = 70 %))
 ((FAR-FIELD NOISE ()) PAGE 7))



A N G L E I N D E G R E E S

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(-----)
( FIGURE: MAXIMUM PERMISSIBLE TIME {} FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION: )
( 9 EQUAL TIME CONTOURS (MINUTES) ) )
( ) ) OMEGA 1.4 )
( ) ) TEST 79-738-001 )
( ) ) RUN 02 )
( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( F-16 AIRCRAFT IN THE ) TEMP = 15 C )
( AF32A-25 SUPPRESSOR ) SINGLE ENGINE ) BAR PRESS = .760 M HG )
( J05-21 ENGINE ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )
( FAR-FIELD NOISE ) ) PAGE 8 )
(-----)
```

PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY
AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS
FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)
UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

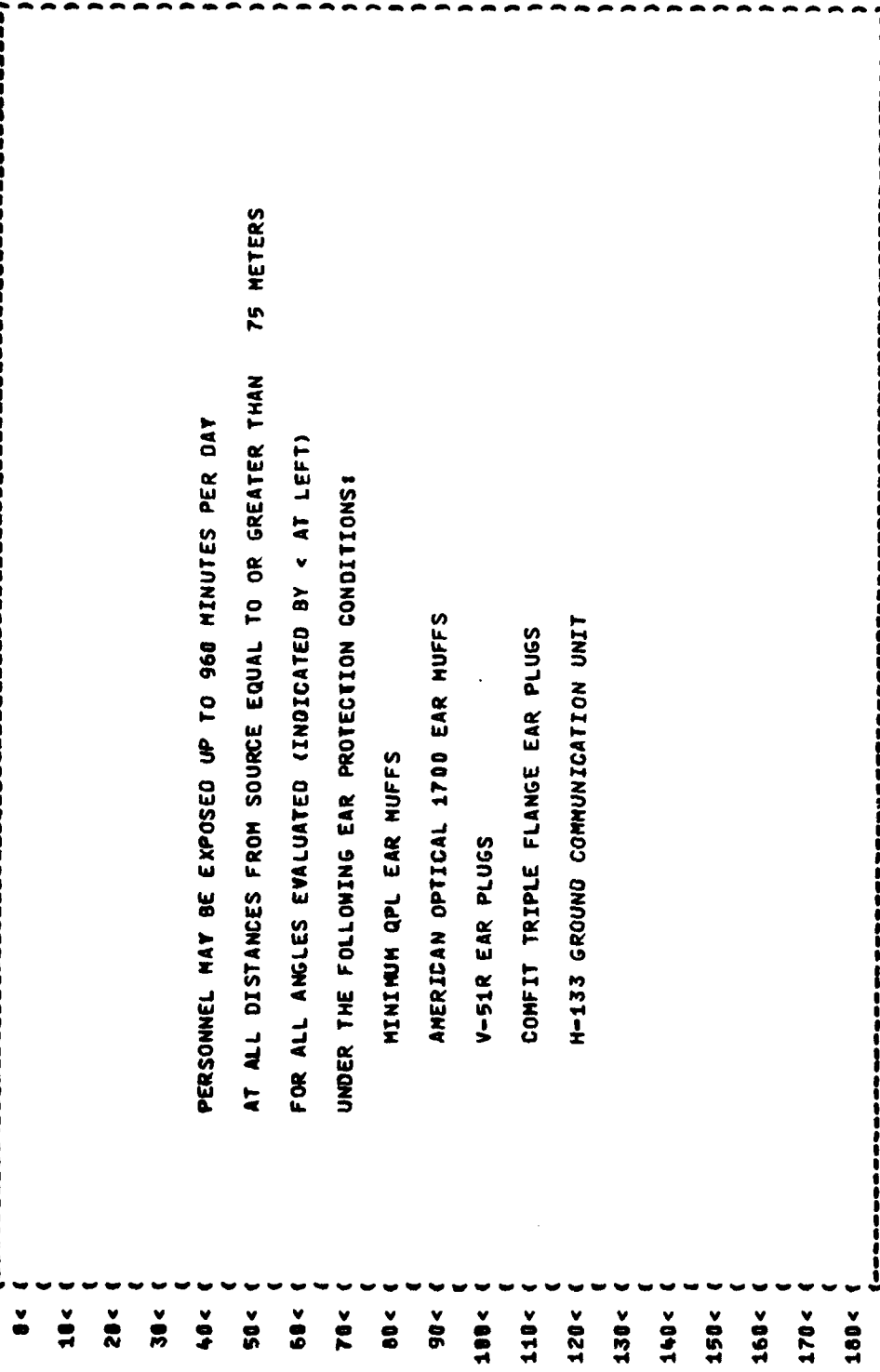
MINIMUM QPL EAR MUFFS
AMERICAN OPTICAL 1700 EAR MUFFS
V-51R EAR PLUGS
COMFIT TRIPLE FLANGE EAR PLUGS
H-133 GROUND COMMUNICATION UNIT


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( ) FIGURE: MAXIMUM PERMISSIBLE TIME {T} FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION:
( ) ) ) ) )
( ) ) OMEGA 1.4 ) )
( ) ----- TEST 79-738-001 ) )
( ) NOISE SOURCE/SUBJECT: ( OPERATION: ) METEOROLOGY: ) )
( ) F-16 AIRCRAFT IN THE ( MILITARY POWER (91% RPM) ) TEMP = 15 C ) )
( ) AF32A-25 SUPPRESSOR ( SINGLE ENGINE ) BAR PRESS = .760 M HG ) )
( ) J05-21 ENGINE ( GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % ) )
( ) FAR-FIELD NOISE ( ) ) PAGE 8 ) )
```

[illegible]

AZUJE HZ DEGRWWS

((FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)) IDENTIFICATION:)
 ((9)))
 ((NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) OMEGA 1.4)
 ((F-16 AIRCRAFT IN THE (AFTERBURNER POWER)) TEMP = 15 C) TEST 79-736-001)
 ((AF32A-25 SUPPRESSOR (SINGLE ENGINE)) BAR PRESS = .760 M HG) RUN 04)
 ((J85-21 ENGINE (GROUND RUNUP (SUPPRESSED))) REL HUMID = 70 %) 22 MAR 79)
 ((FAR-FIELD NOISE ())) PAGE 0)

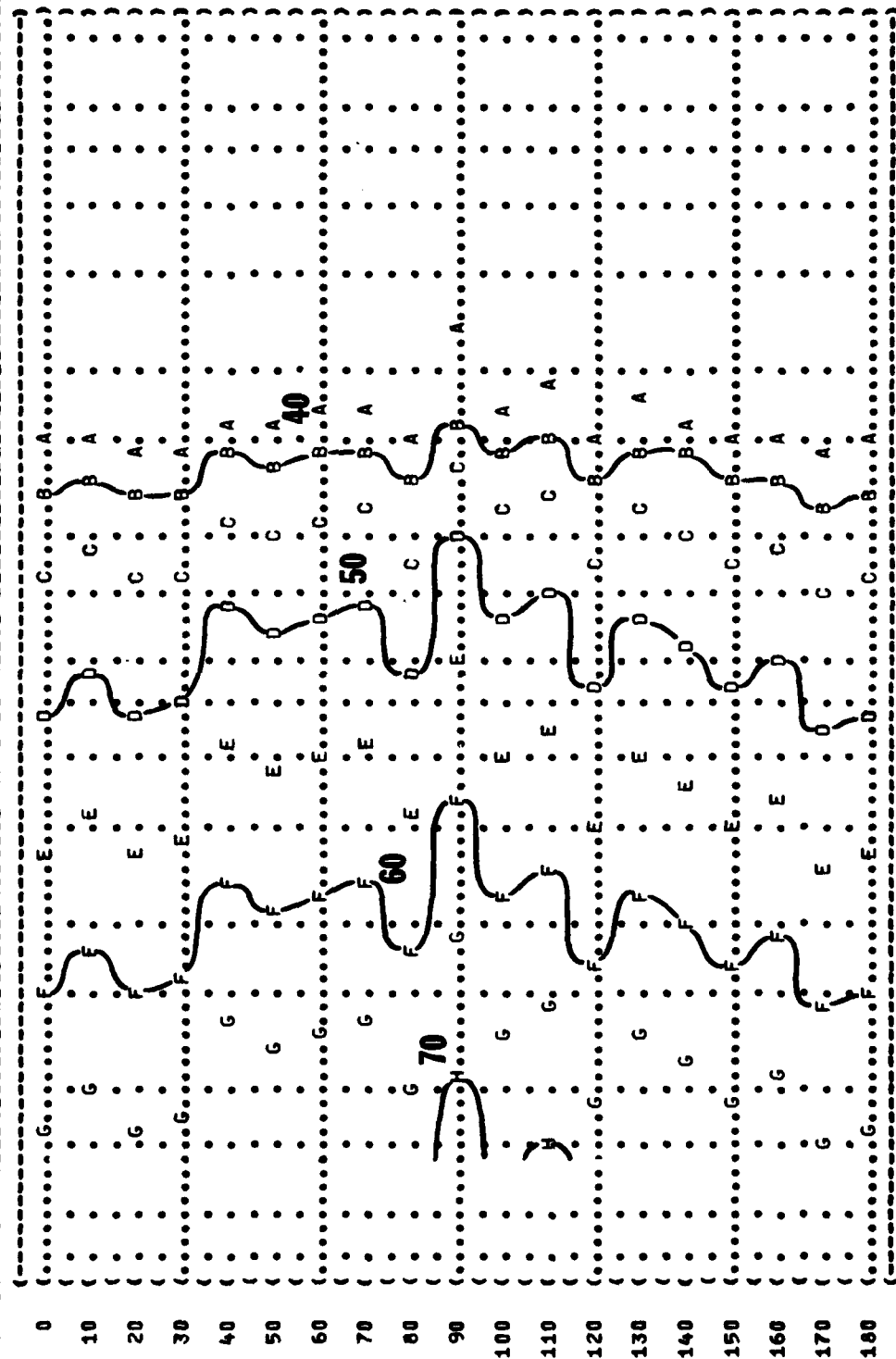


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(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (10 EQUAL LEVEL CONTOURS (DB)
 (31.5 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (F-16 AIRCRAFT IN THE (IDLE POWER (65% RPM)
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE
 (J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)
 (FAR-FIELD NOISE (

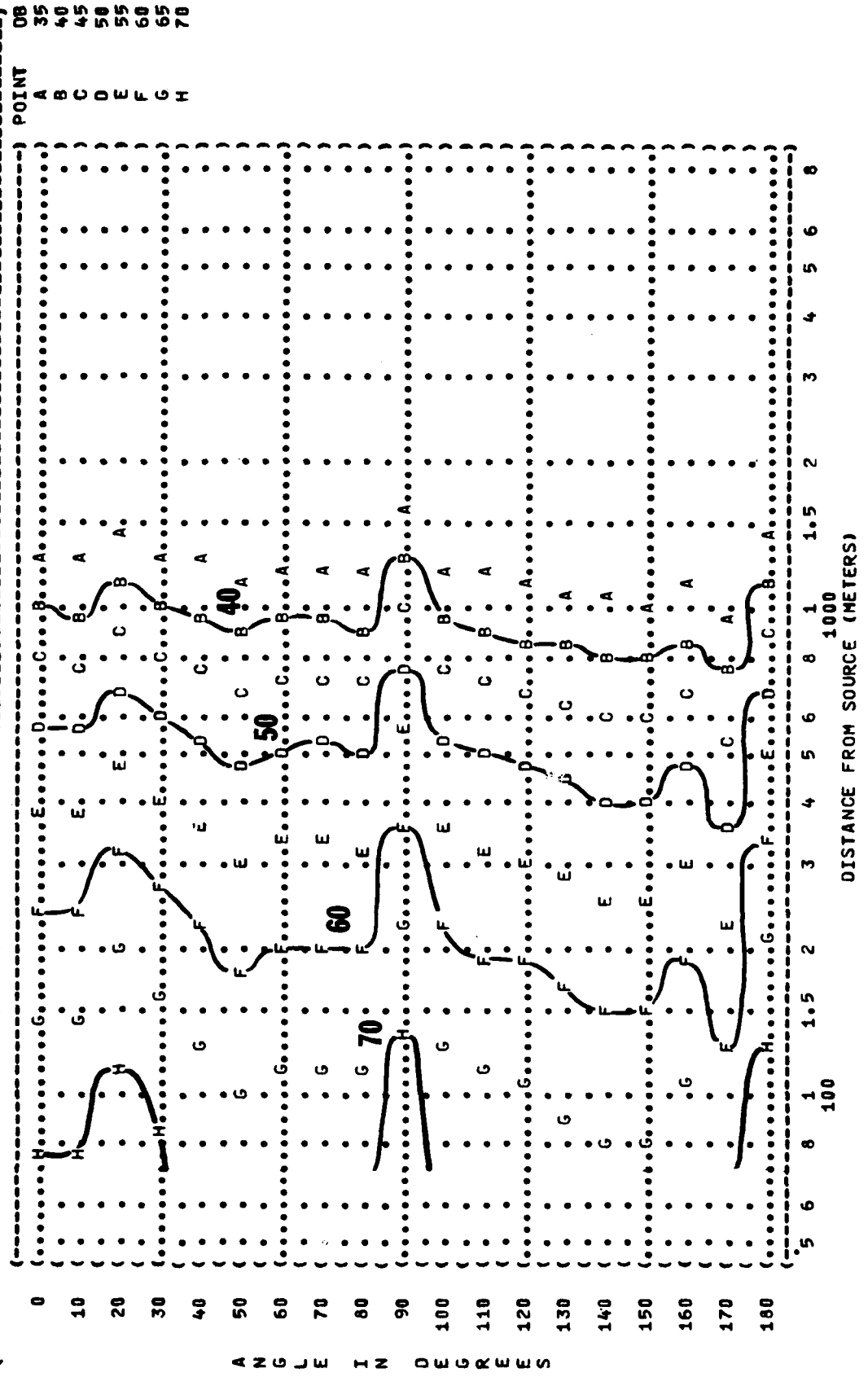
) IDENTIFICATION:)
) OMEGA 1.4)
) TEST 79-738-001)
) RUN 01)
) 22 MAR 79)
) PAGE 18)
) METEOROLOGY:)
) TEMP = 15 C)
) BAR PRESS = .760 M HG)
) REL HUMID = 70 %)
) POINT DB
) A 35
) B 40
) C 45
) D 50
) E 55
) F 60
) G 65
) H 70

A N G L E I N D E G R E E S



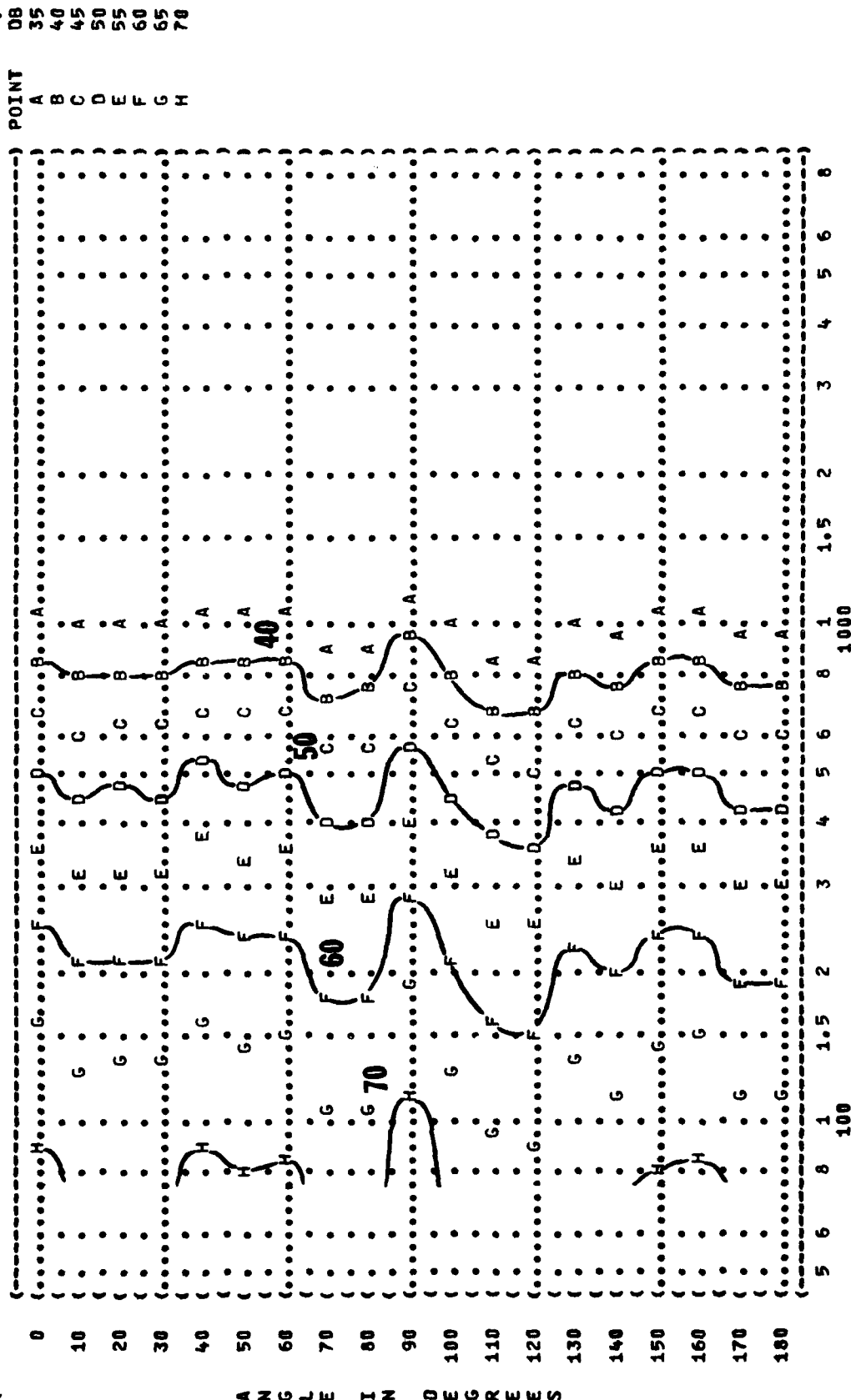
DISTANCE FROM SOURCE (METERS)

(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 ((EQUAL LEVEL CONTOURS (DB)))
 (10 63 HZ OCTAVE BAND) OMEGA 1.4)
 () TEST 79-738-001)
 (NOISE SOURCE/SUBJECT:) OPERATIONS:) METEOROLOGY:)
 (F-16 AIRCRAFT IN THE) IDLE POWER (65% RPM)) TEMP = 15 C)
 (AF32A-25 SUPPRESSOR) SINGLE ENGINE) BAR PRESS = .760 M HG)
 (J85-21 ENGINE) GROUND RUNUP (SUPPRESSED)) REL HUMID = 70 %)
 (FAR-FIELD NOISE)) PAGE 19)



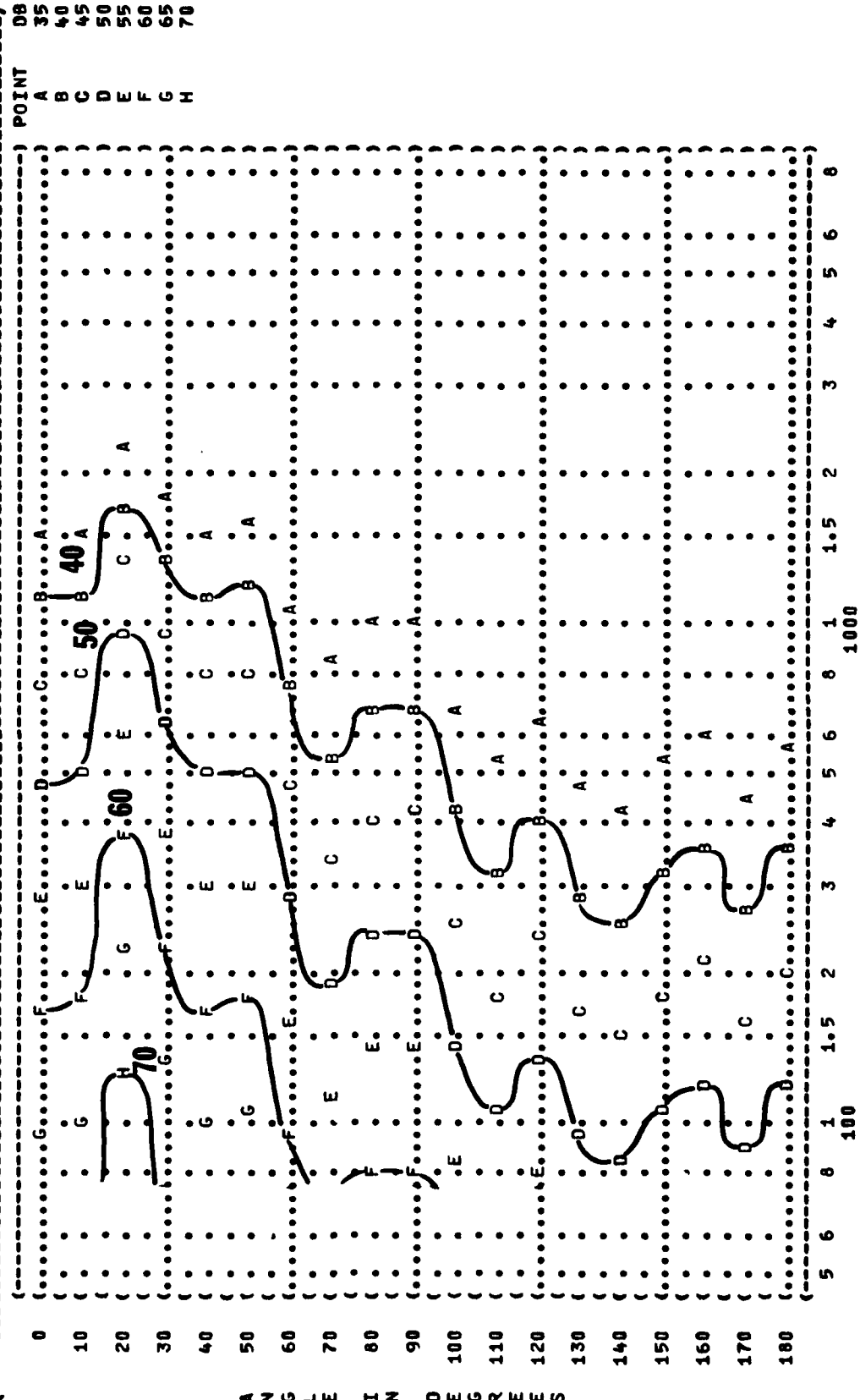
A N G L E I N D E G R E E S

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (10 125 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION: (METEOROLOGY: (POINT DB
 (F-16 AIRCRAFT IN THE (IDLE POWER (65% RPM)) TEMP = 15 C
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE) BAR PRESS = .760 M HG
 (J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)) REL HUMID = 70 %
 (FAR-FIELD NOISE ()) PAGE 20)



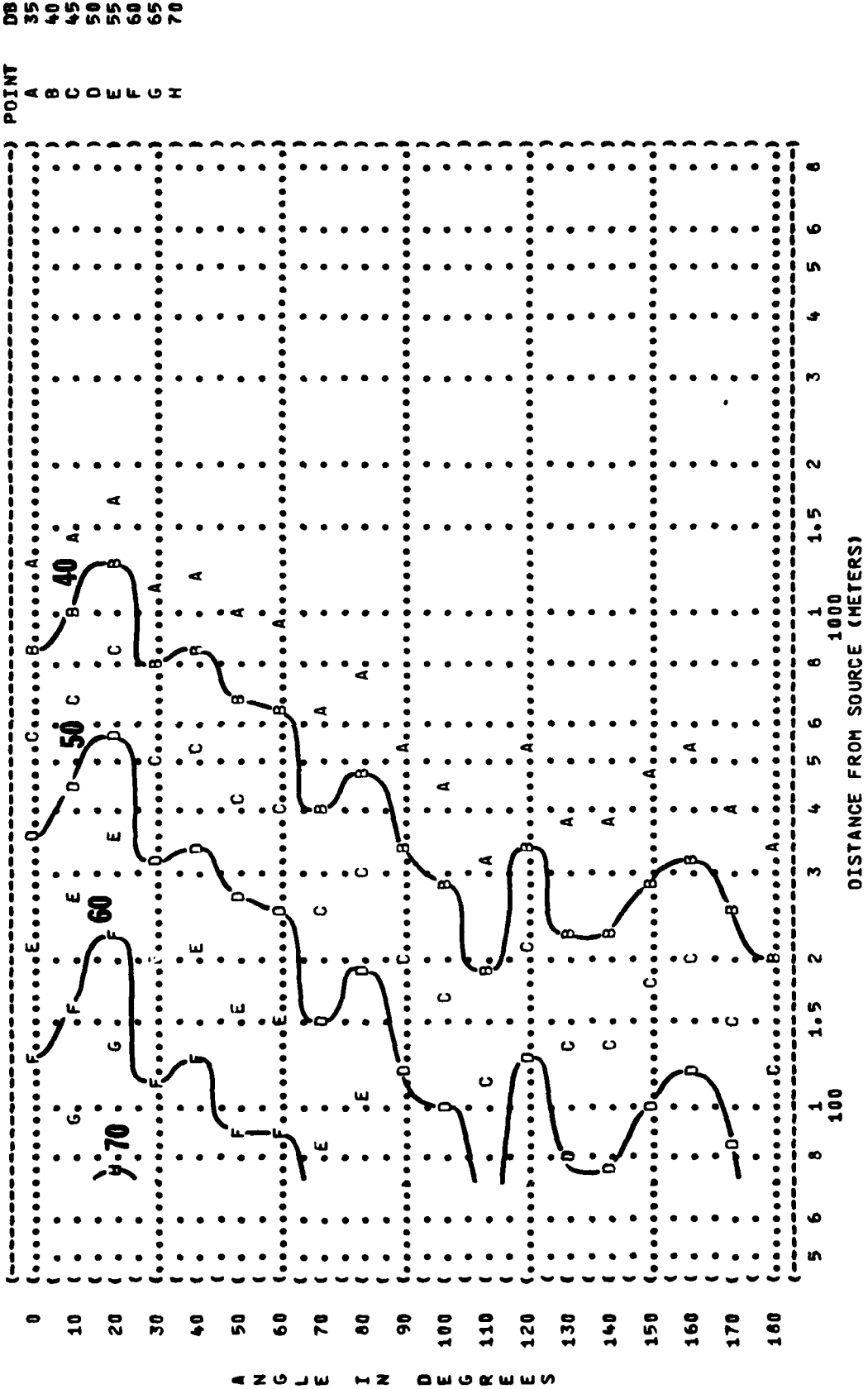
A N G L E I N D E G R E E S

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (10 500 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION: (METEOROLOGY:
 (F-16 AIRCRAFT IN THE (IDLE POWER (65% RPM)) TEMP = 15 C
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE) BAR PRESS = .760 M HG
 (J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)) REL HUMID = 70 %
 (FAR-FIELD NOISE ()) PAGE 22)



ANGLE IN DEGREE

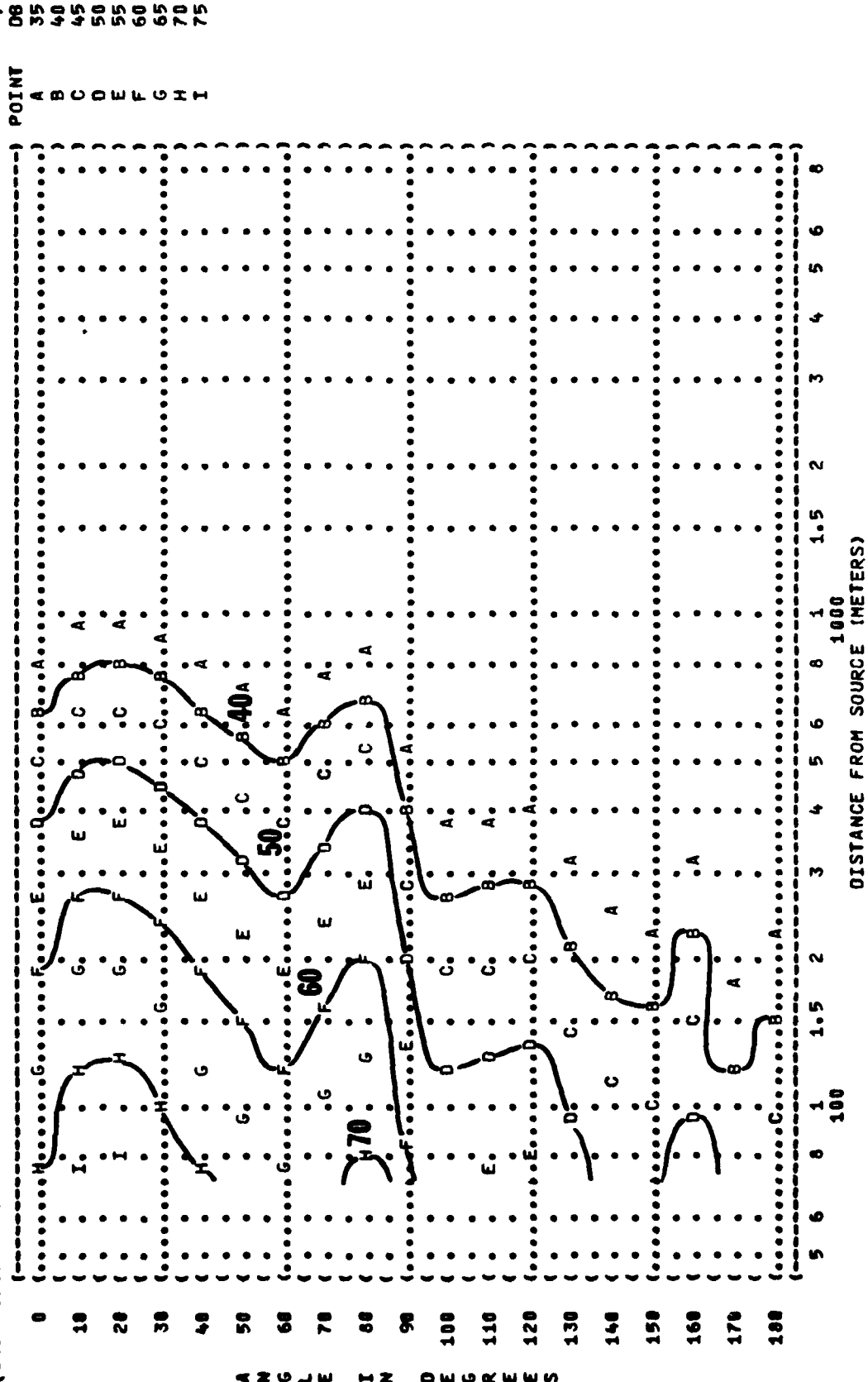
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) OMEGA 1.4)
) TEST 79-730-001)
) RUN 01)
) METEOROLOGY:)
) TEMP = 15 C)
) BAR PRESS = .760 M HG)
) REL HUMID = 70 %)
) PAGE 23)
)
) NOISE SOURCE/SUBJECT:)
) F-16 AIRCRAFT IN THE)
) AF32A-25 SUPPRESSOR)
) J05-21 ENGINE)
) FAR-FIELD NOISE)



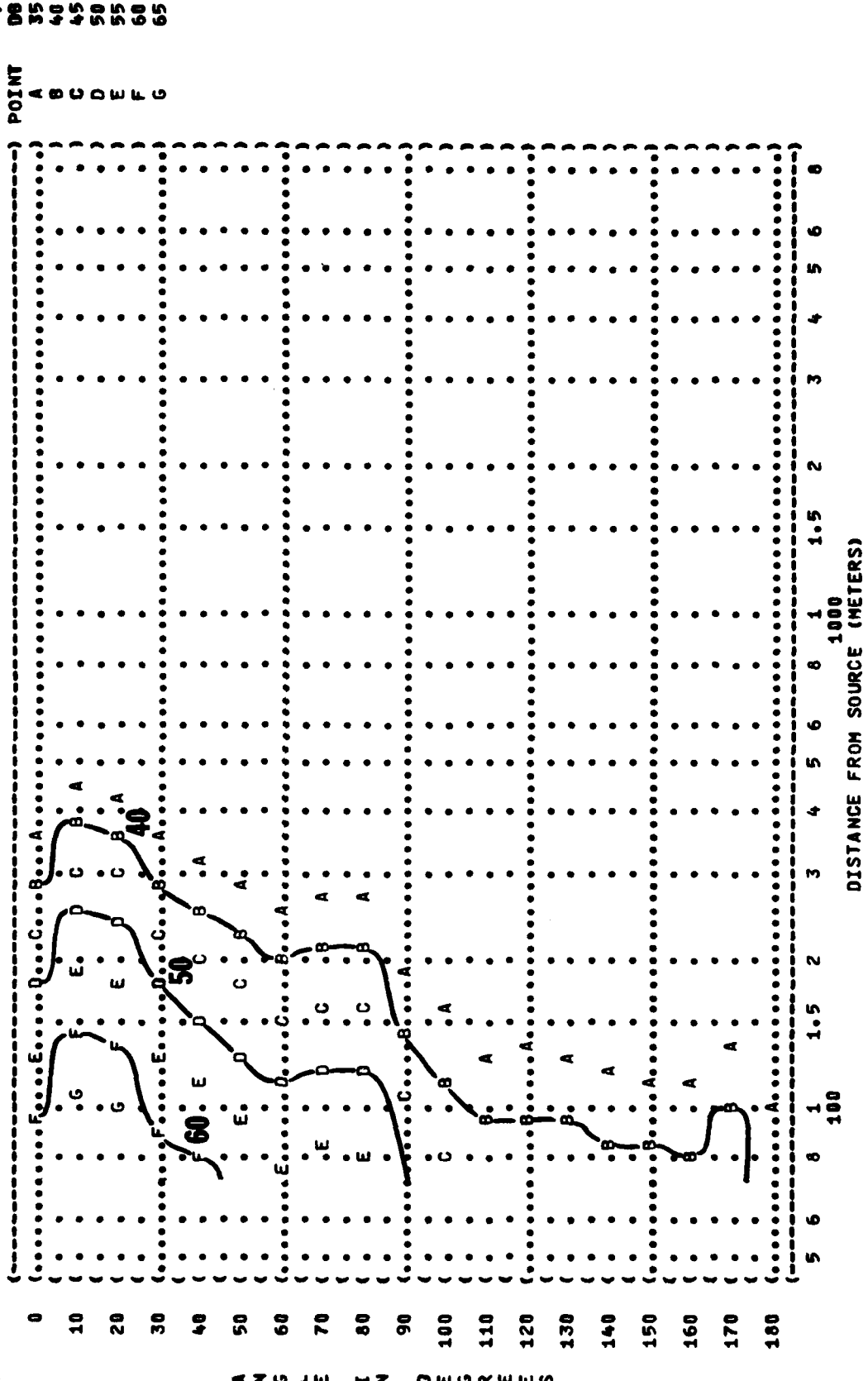

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(-----)
( FIGURE: SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION:
( EQUAL LEVEL CONTOURS (DB) )
( 10 ) OMEGA 1.4
( 4000 HZ OCTAVE BAND ) TEST 79-730-001
(-----)
( NOISE SOURCE/SUBJECT: ) METEOROLOGY:
( F-16 AIRCRAFT IN THE ) TEMP = 15 C
( AF32A-25 SUPPRESSOR ) SINGLE ENGINE ) BAR PRESS = .760 M HG
( J05-21 ENGINE ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 %
( FAR-FIELD NOISE ) )
(-----)

```



(FIGURE 1 SOUND PRESSURE LEVEL (SPL)
 (10 EQUAL LEVEL CONTOURS (DB)
 (8000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION: (METEOROLOGY: (POINT DB
 (F-16 AIRCRAFT IN THE (IDLE POWER (65% RPM)) TEMP = 15 C 35
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE) BAR PRESS = .760 H HG 40
 (J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)) REL HUMID = 70 % 45
 (FAR-FIELD NOISE ()) 50
 ())) 55
 ())) 60
 ())) 65

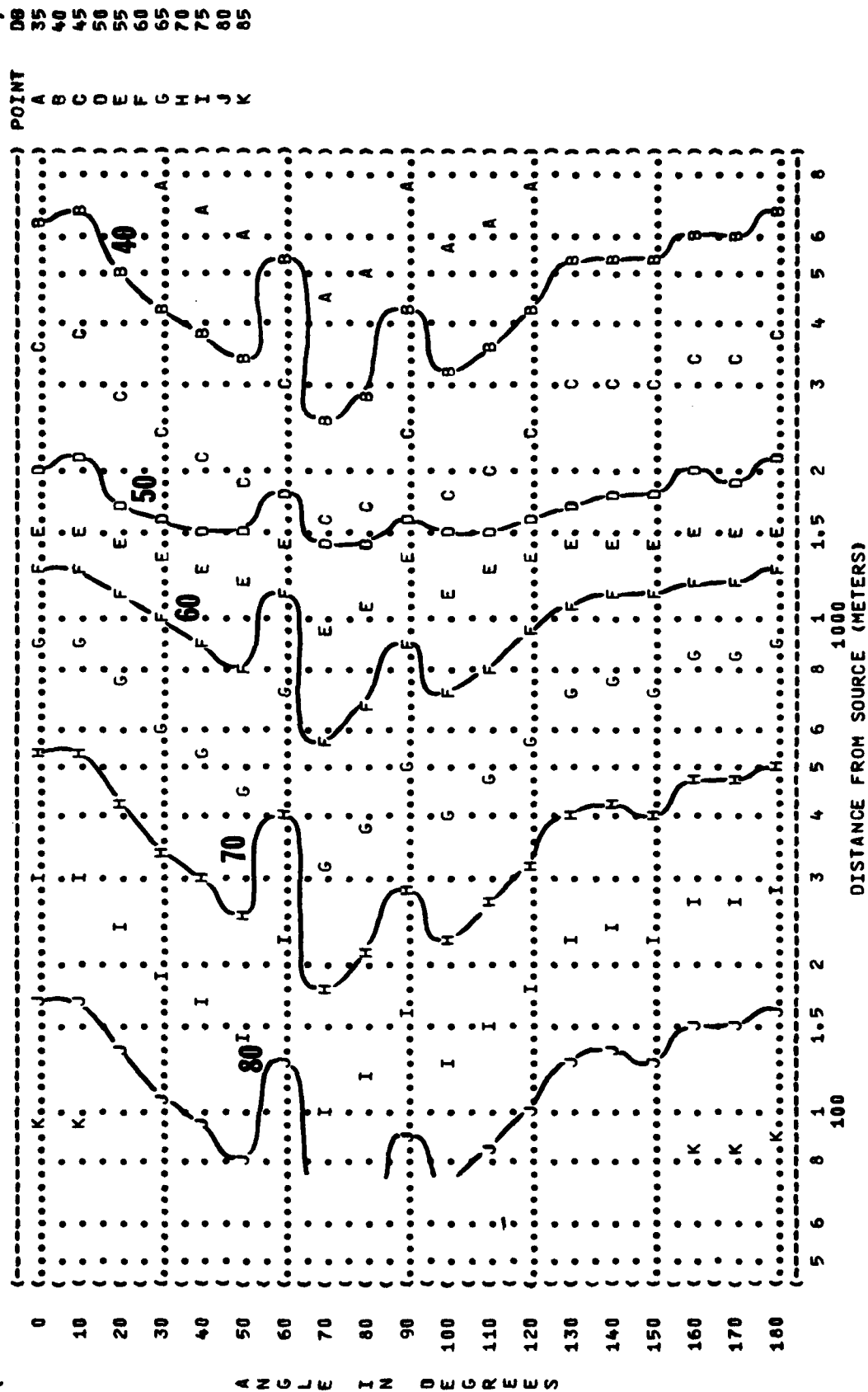


A N G L E I N D E G R E E S

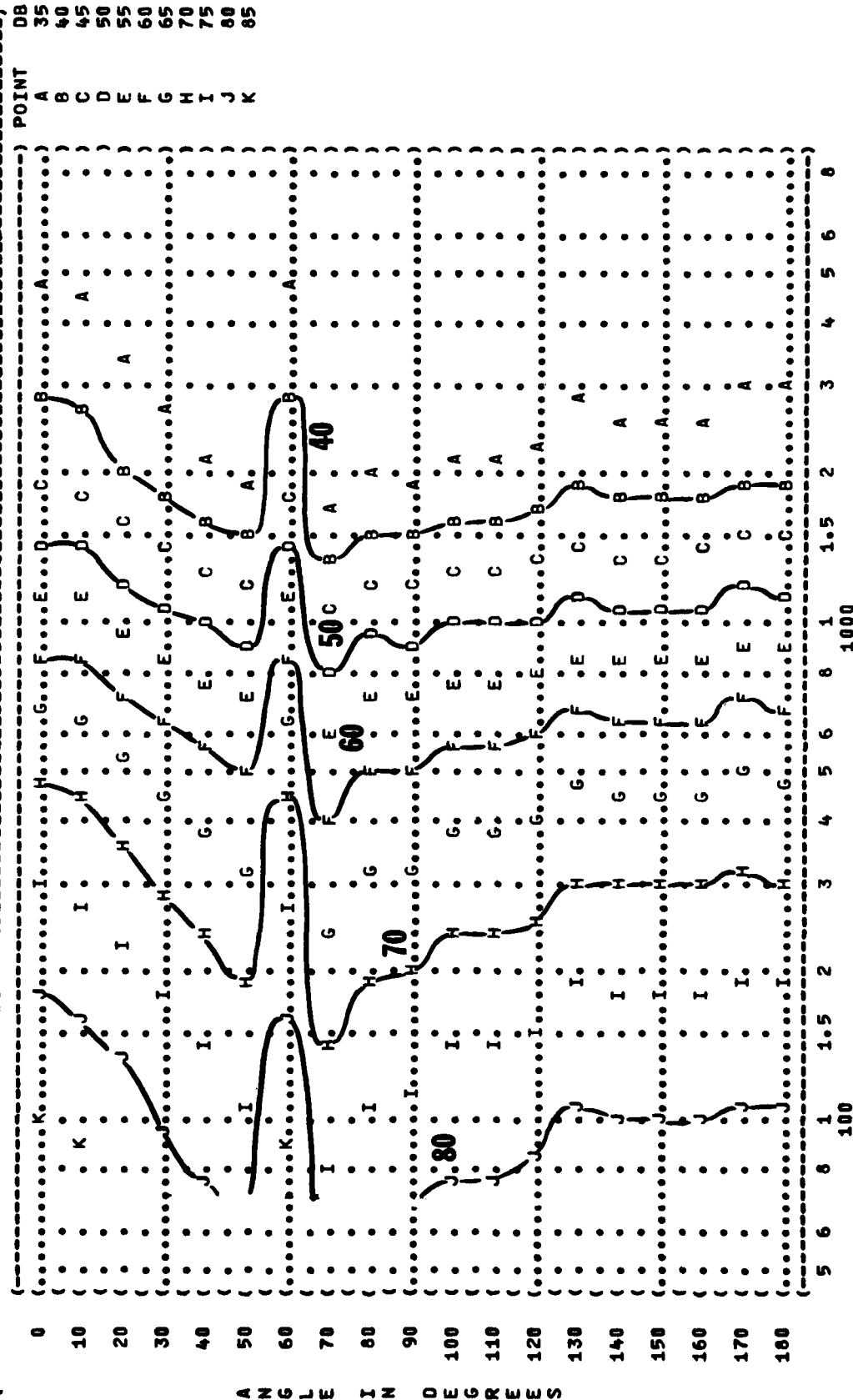
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(-----)
( ( FIGURE: SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION: )
( ( EQUAL LEVEL CONTOURS (DB) ) )
( ( 10 ) )
( ( 31.5 HZ OCTAVE BAND ) )
(-----)
( ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( ( F-16 AIRCRAFT IN THE ) TEMP = 15 C )
( ( AF32A-25 SUPPRESSOR ) SINGLE ENGINE ) BAR PRESS = .760 M HG )
( ( J85-21 ENGINE ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )
( ( FAR-FIELD NOISE ) ) )
(-----)
( ( PAGE 18 ) )
(-----)

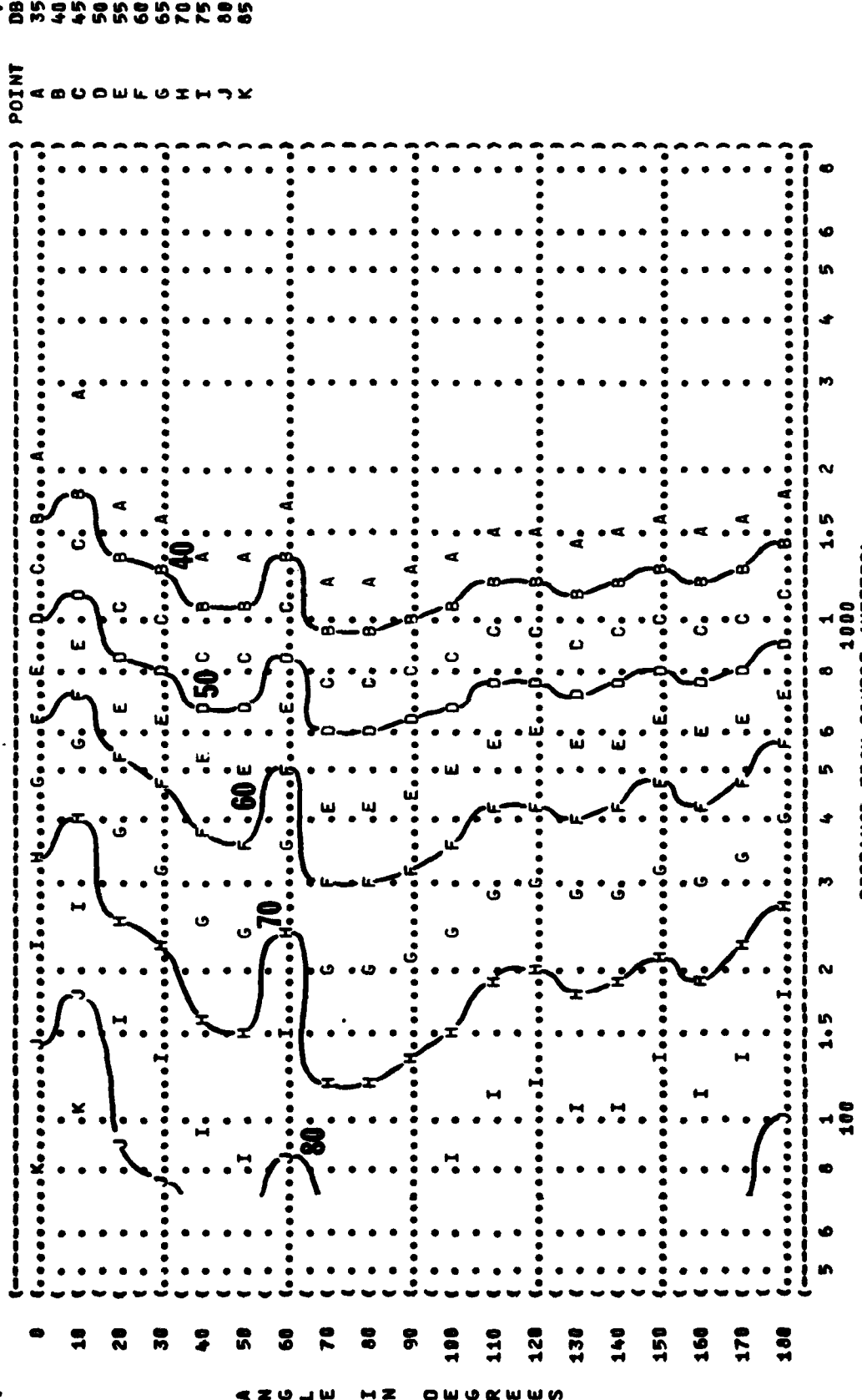
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(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (10 63 HZ OCTAVE BAND
 () IDENTIFICATION:
 ()
 () OMEGA 1.4
 () TEST 79-738-001
 () RUN 02
 ()
 (NOISE SOURCE/SUBJECT:) METEOROLOGY:
 (F-16 AIRCRAFT IN THE) TEMP = 15 C
 (AF32A-25 SUPPRESSOR) SINGLE ENGINE BAR PRESS = .760 M HG
 (J85-21 ENGINE) GROUND RUNUP (SUPPRESSED) REL HUMID = 70 %
 (FAR-FIELD NOISE))
 () PAGE 19
 ()



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (10 EQUAL LEVEL CONTOURS (DB)
 (125 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (F-16 AIRCRAFT IN THE (88X RPM
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE
 (J65-21 ENGINE (GROUND RUNUP (SUPPRESSED)
 (FAR-FIELD NOISE ()
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () PAGE 20
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 79-738-001
 () RUN 02



DISTANCE FROM SOURCE (METERS)

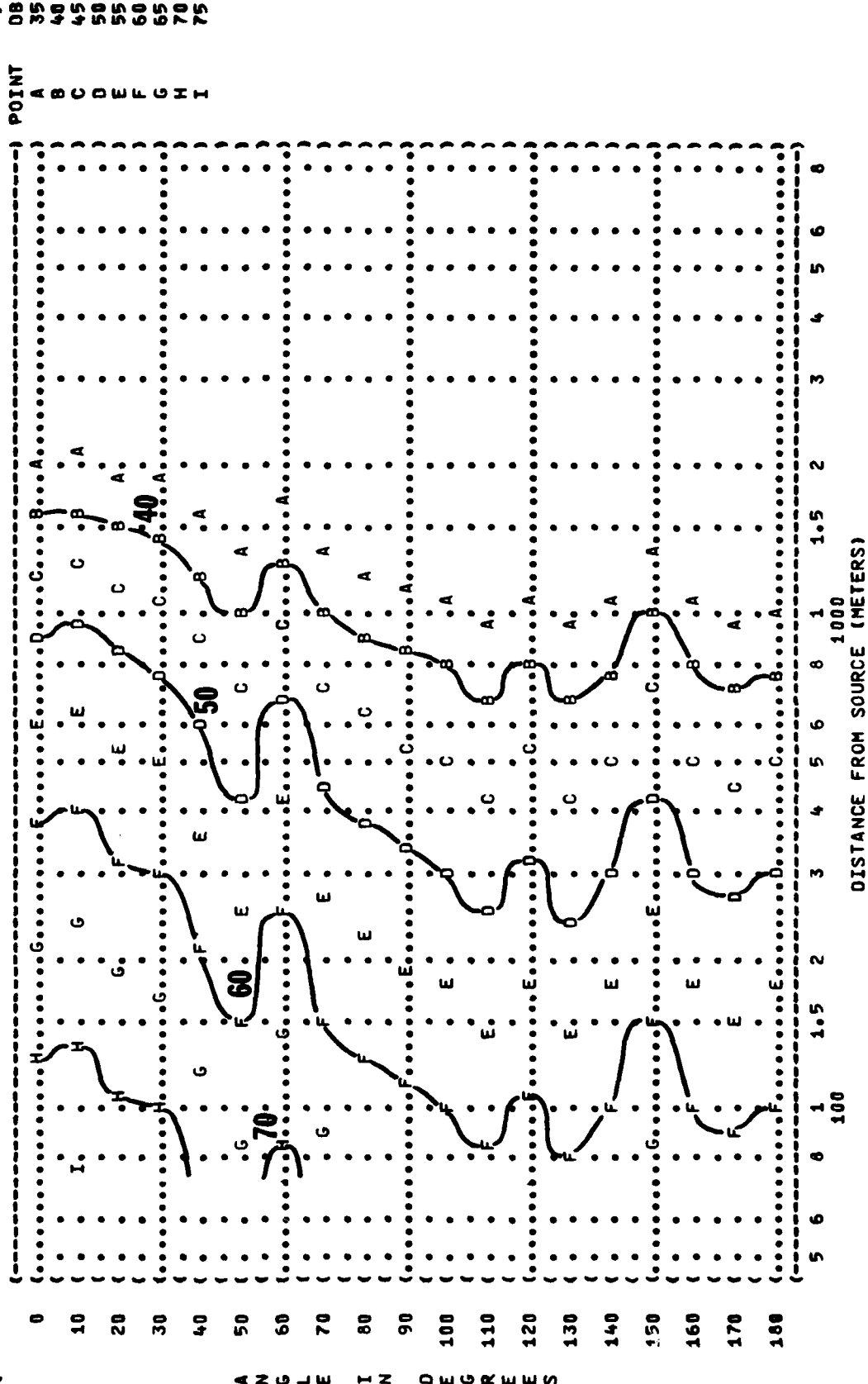
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))
) OMEGA 1.4
) TEST 79-738-001
) RUN 02
)
) NOISE SOURCE/SUBJECT:) METEOROLOGY:
) F-16 AIRCRAFT IN THE) TEMP = 15 C
) AF32A-25 SUPPRESSOR) BAR PRESS = .760 H HG
) J85-21 ENGINE) GROUND RUNUP (SUPPRESSED)) REL HUMID = 70 %
) FAR-FIELD NOISE))
) PAGE 21



DISTANCE FROM SOURCE (METERS)

A N G L E I N D E G R E E S

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (10 EQUAL LEVEL CONTOURS (DB)
 (500 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (F-16 AIRCRAFT IN THE (80% RPM
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE
 (J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)
 (FAR-FIELD NOISE ()
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 79-738-001
 () RUN 02
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () 22 MAR 79
 () PAGE 22

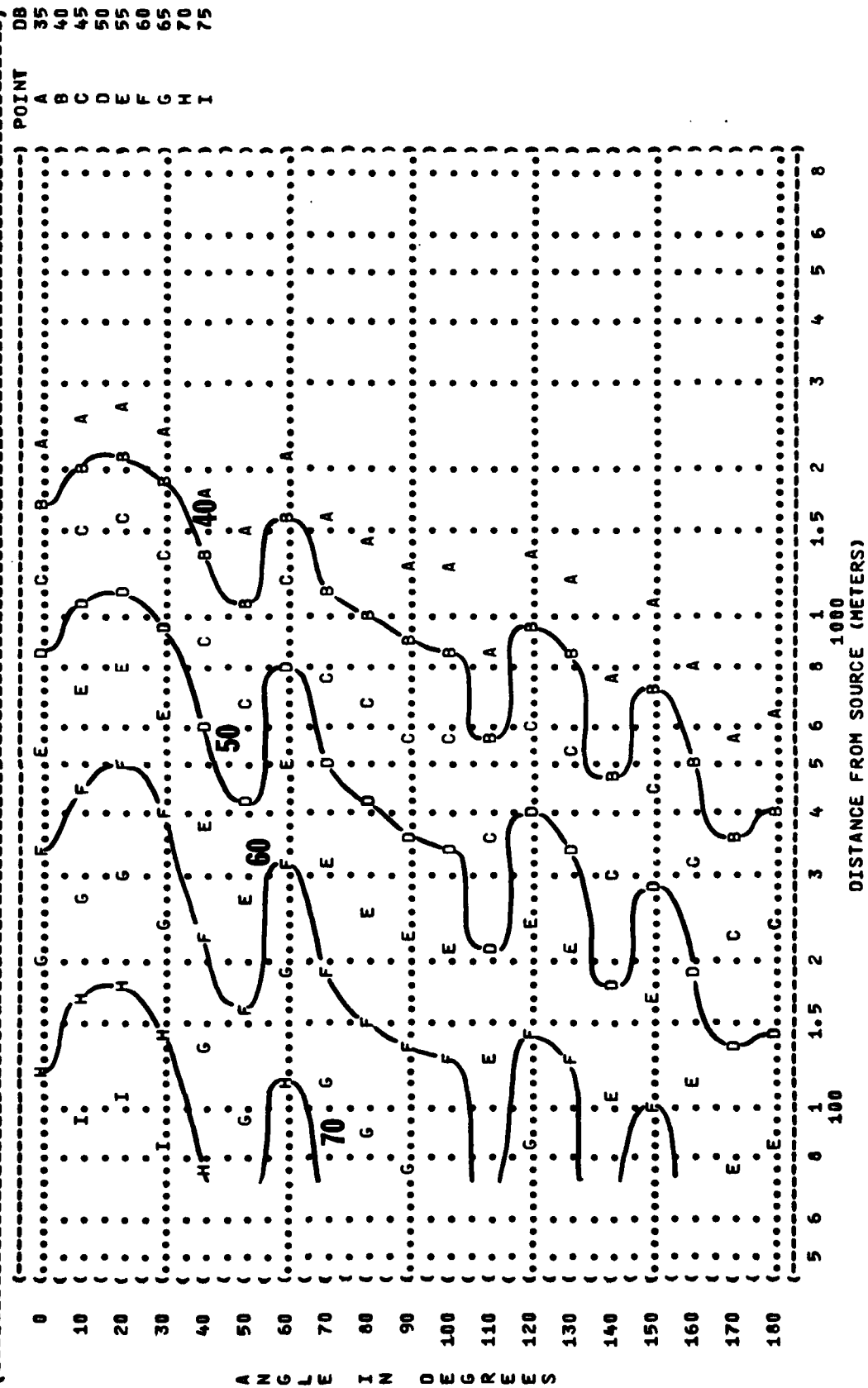


A N G L E I N D E G R E E S

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(-----)
( FIGURE: SOUND PRESSURE LEVEL (SPL) )
( 10 EQUAL LEVEL CONTOURS (DB) )
( 1000 HZ OCTAVE BAND )
(-----)
( NOISE SOURCE/SUBJECT: )
( F-16 AIRCRAFT IN THE )
( AF32A-25 SUPPRESSOR )
( J05-21 ENGINE )
( FAR-FIELD NOISE )
(-----)
( OPERATION: )
( 80% RPM )
( SINGLE ENGINE )
( GROUND RUNUP (SUPPRESSED) )
(-----)
( METEOROLOGY: )
( TEMP = 15 C )
( BAR PRESS = .760 M HG )
( REL HUMID = 70 % )
(-----)
( IDENTIFICATION: )
( )
( OMEGA 1.4 )
( TEST 79-738-001 )
( RUN 02 )
( 22 MAR 79 )
( PAGE 23 )
(-----)

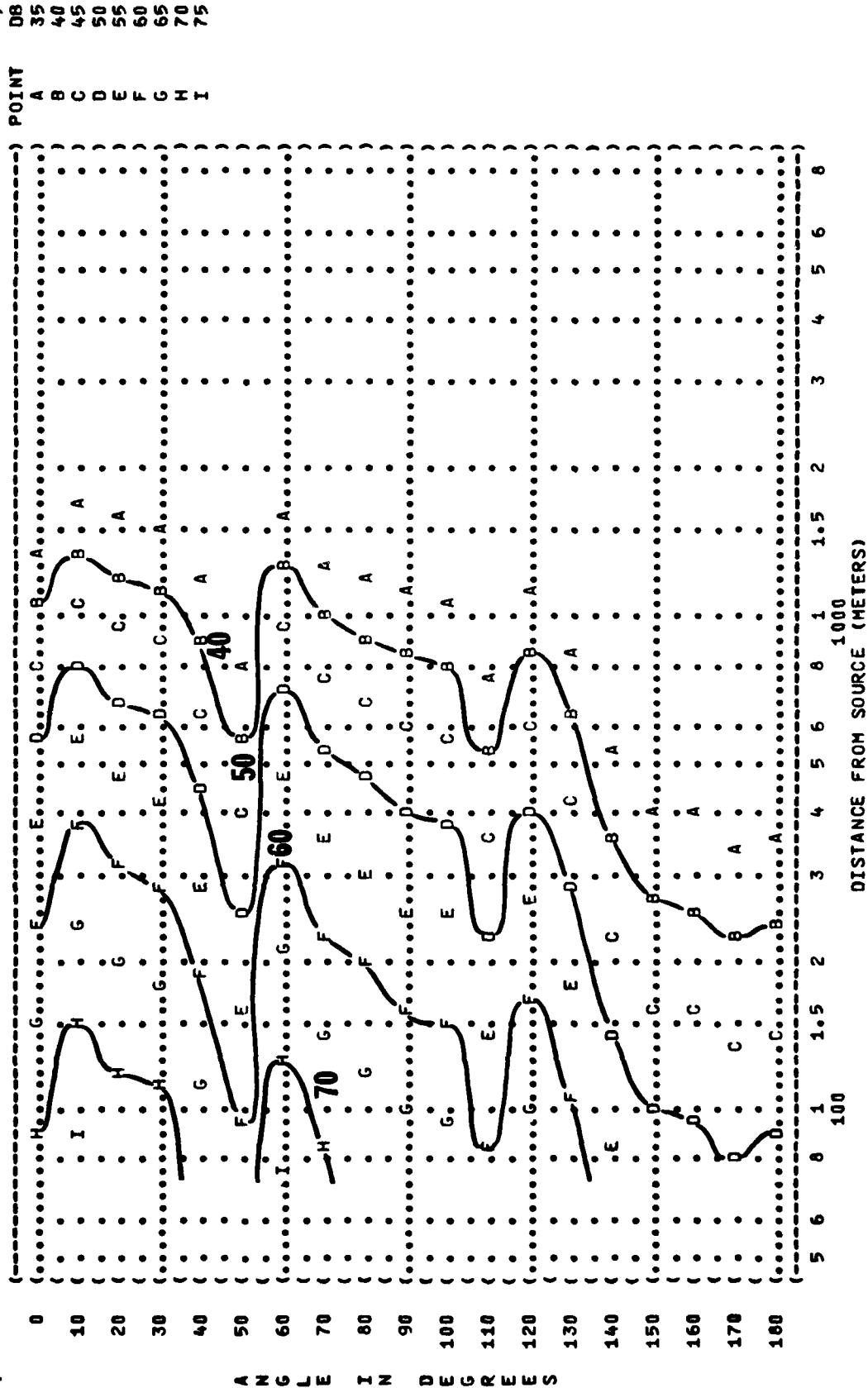
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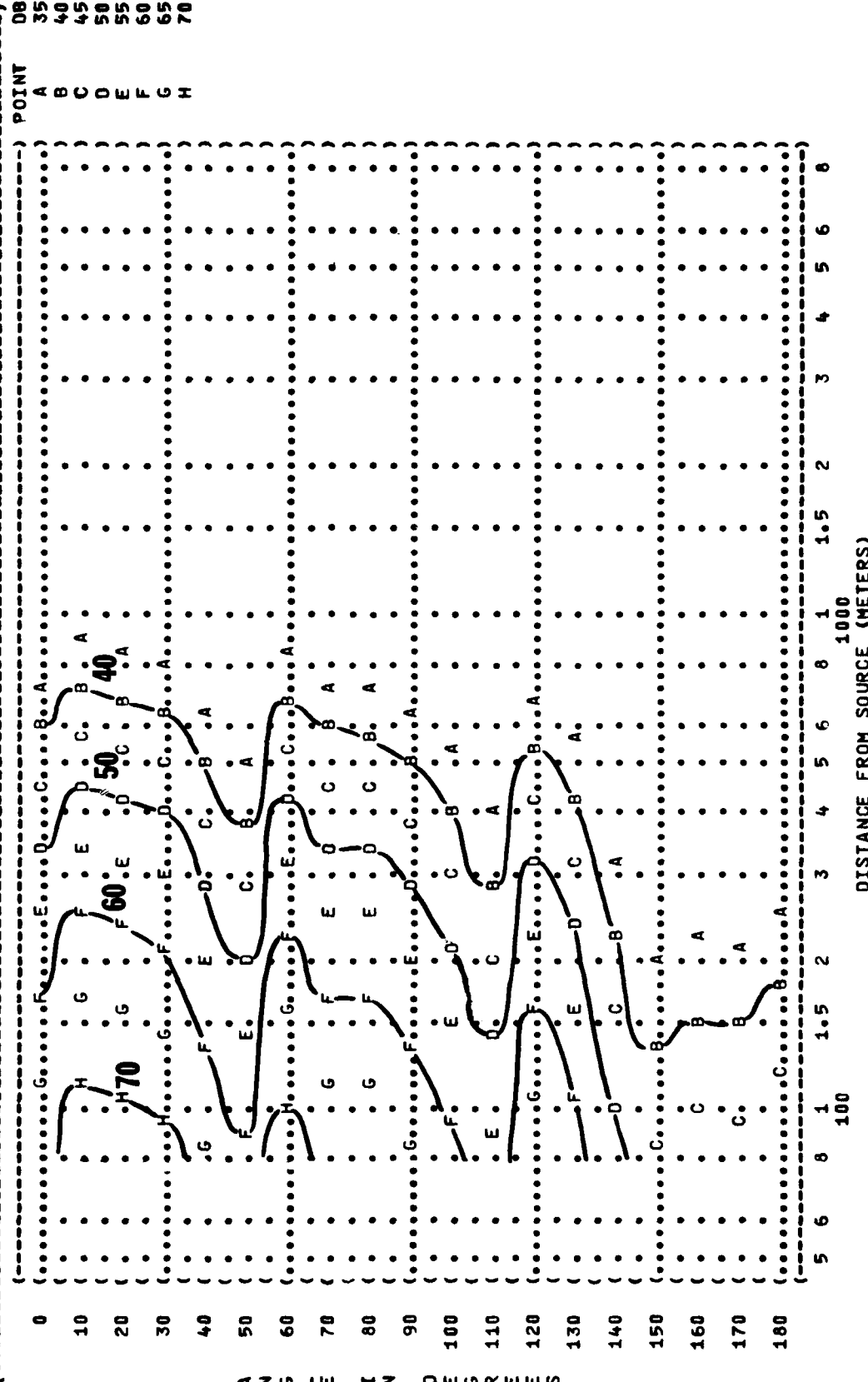
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( ( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )
( ( EQUAL LEVEL CONTOURS (DB) ) )
( ( 10 ) )
( ( 2000 HZ OCTAVE BAND ) )
(-----)
( ( NOISE SOURCE/SUBJECT: ) )
( ( F-16 AIRCRAFT IN THE ) )
( ( AF32A-25 SUPPRESSOR ) )
( ( J85-21 ENGINE ) )
( ( FAR-FIELD NOISE ) )
(-----)
( ( OPERATION: ) )
( ( 80% RPM ) )
( ( SINGLE ENGINE ) )
( ( GROUND RUNUP (SUPPRESSED) ) )
(-----)
( ( METEOROLOGY: ) )
( ( TEMP = 15 C ) )
( ( BAR PRESS = .760 M HG ) )
( ( REL HUMID = 70 % ) )
(-----)
( ( TEST 79-730-001 ) )
( ( RUN 02 ) )
(-----)
( ( OMEGA 1.4 ) )
( ( PAGE 24 ) )
(-----)

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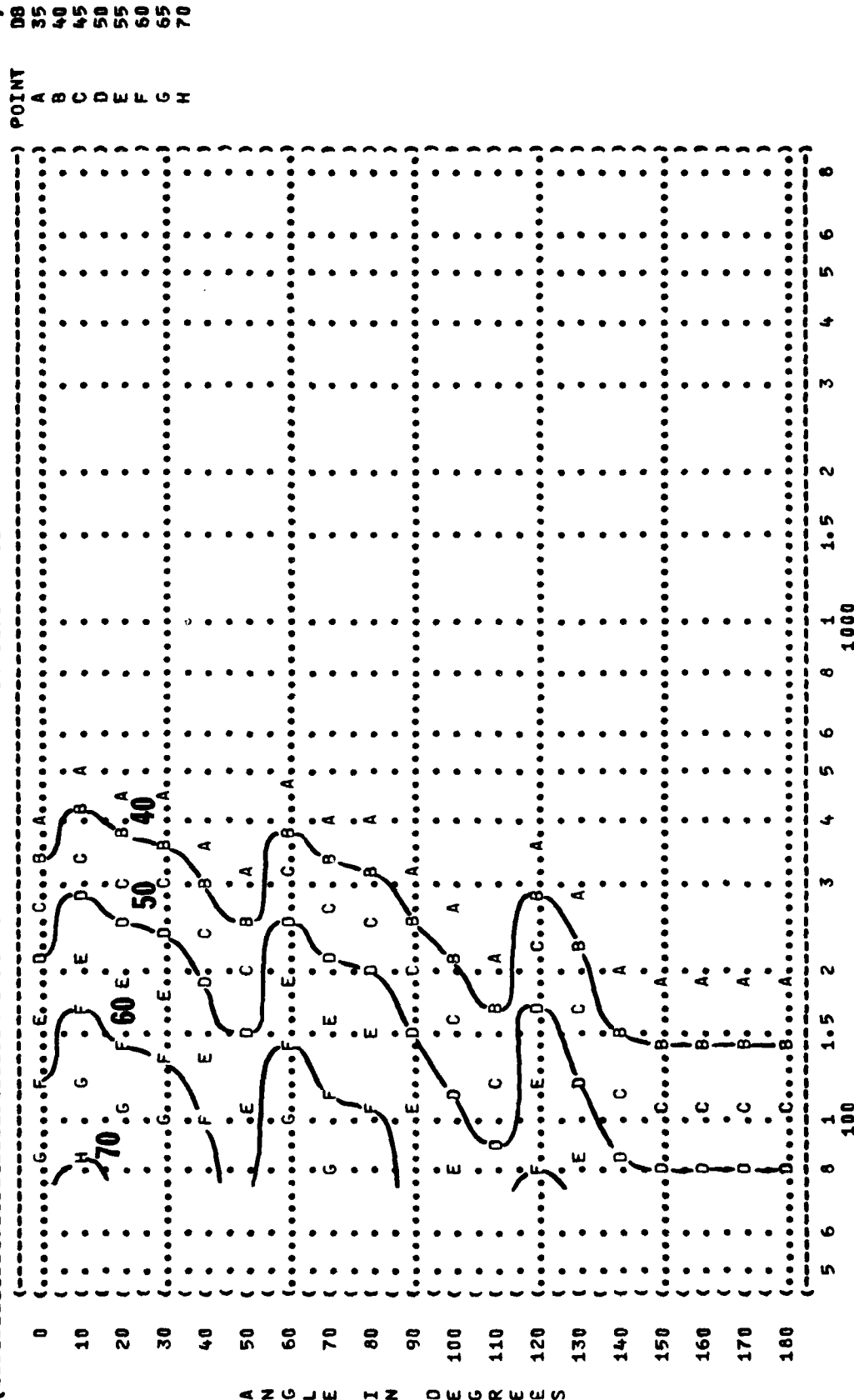


(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (10 EQUAL LEVEL CONTOURS (DB)
 (4000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
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 (AF32A-25 SUPPRESSOR (SINGLE ENGINE
 (J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)
 (FAR-FIELD NOISE ()
 () METEOROLOGY: ()
 () TEMP = 15 C
 () BAR PRESS = .760 H MG
 () REL HUMID = 70 %
 () PAGE 25
 () IDENTIFICATION: ()
 () OMEGA 1.4
 () TEST 79-738-001
 () RUN 02
 () 22 MAR 79

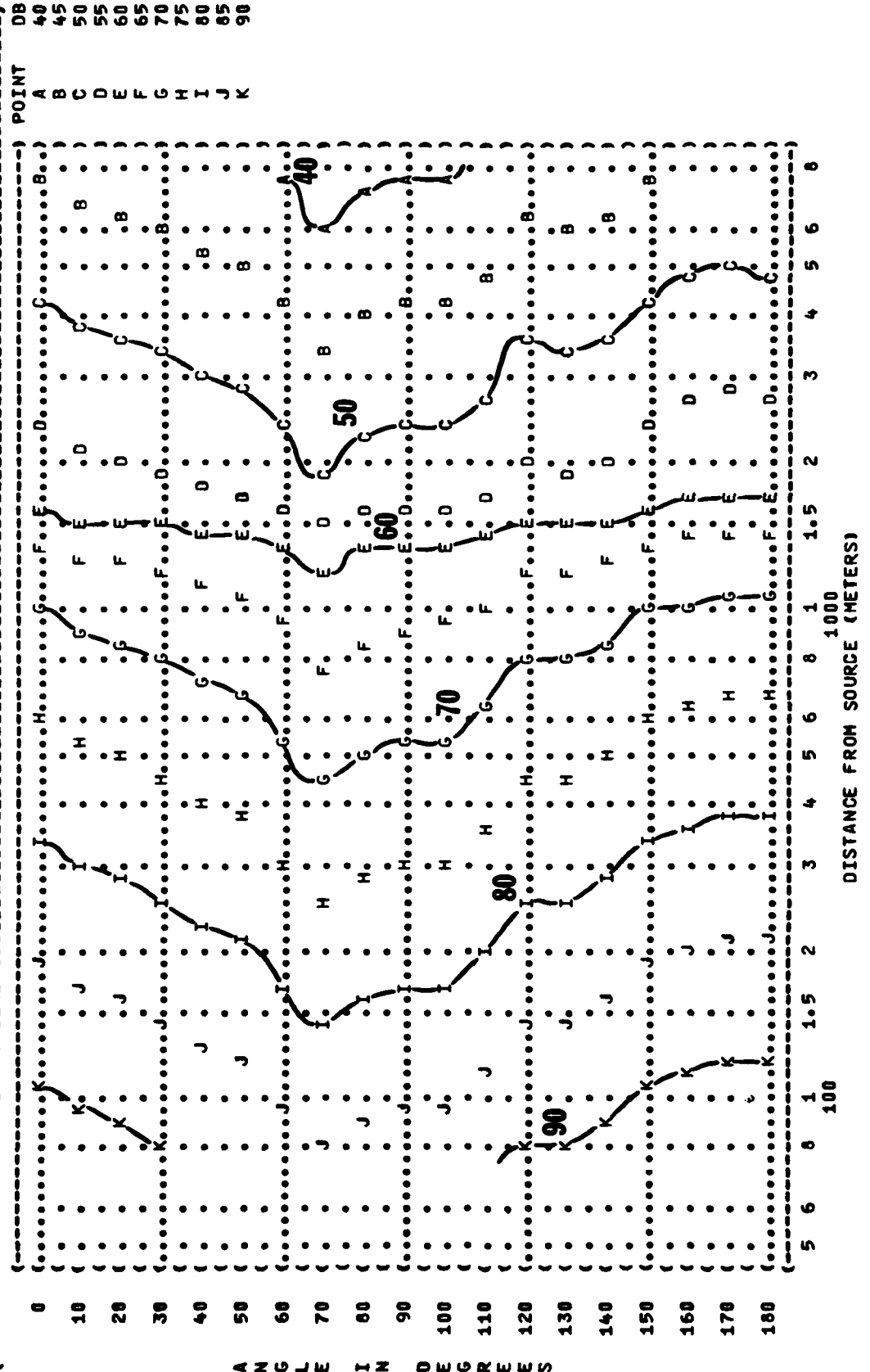


A N G L E I N D E G R E E S

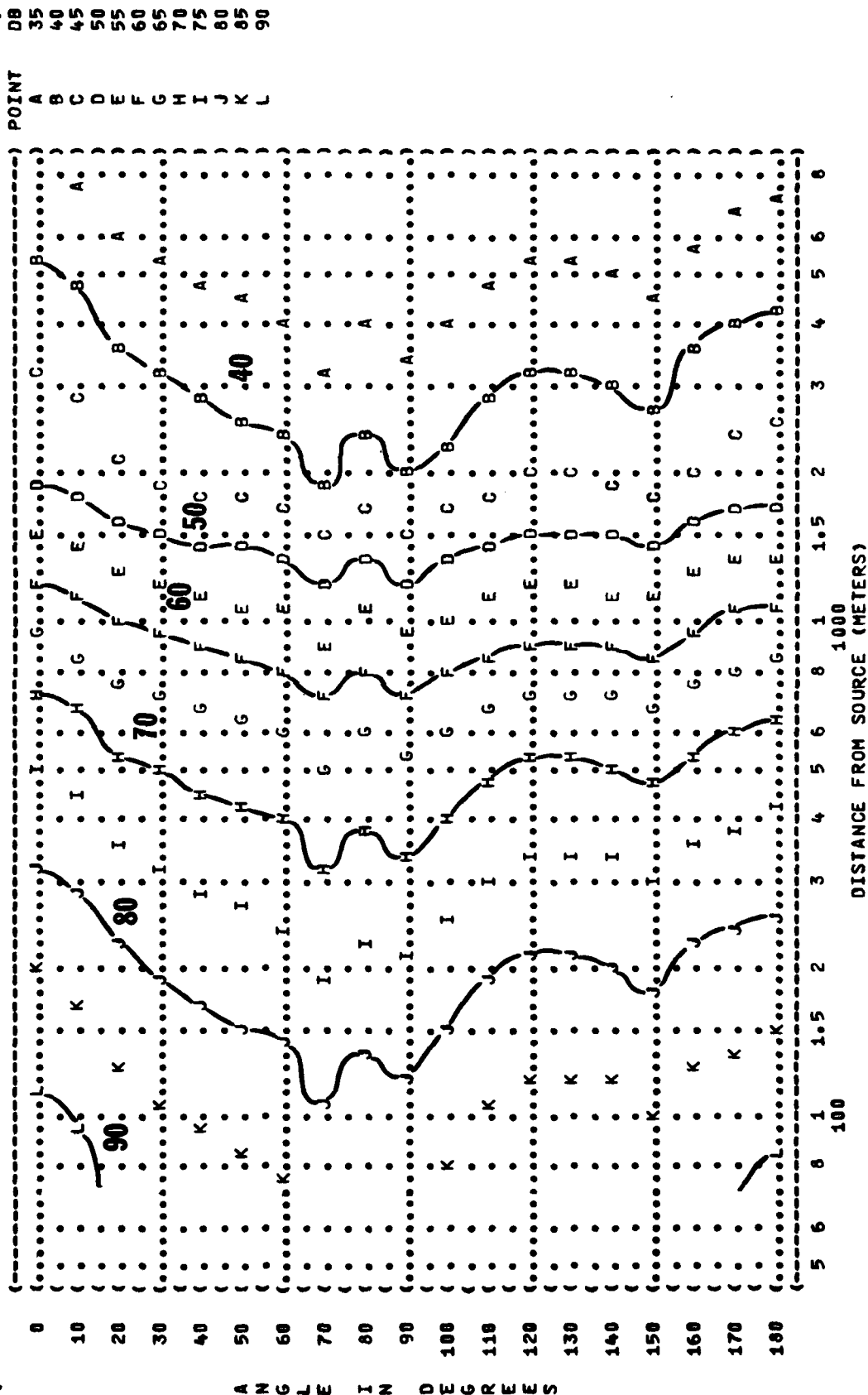
(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (EQUAL LEVEL CONTOURS (DB))
 (10 8000 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (F-16 AIRCRAFT IN THE)
 (AF32A-25 SUPPRESSOR)
 (J85-21 ENGINE)
 (FAR-FIELD NOISE)
 (OPERATION:)
 (80% RPM)
 (SINGLE ENGINE)
 (GROUND RUNUP (SUPPRESSED))
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 79-738-001)
 (RUN 02)
 (22 MAR 79)
 (PAGE 26)



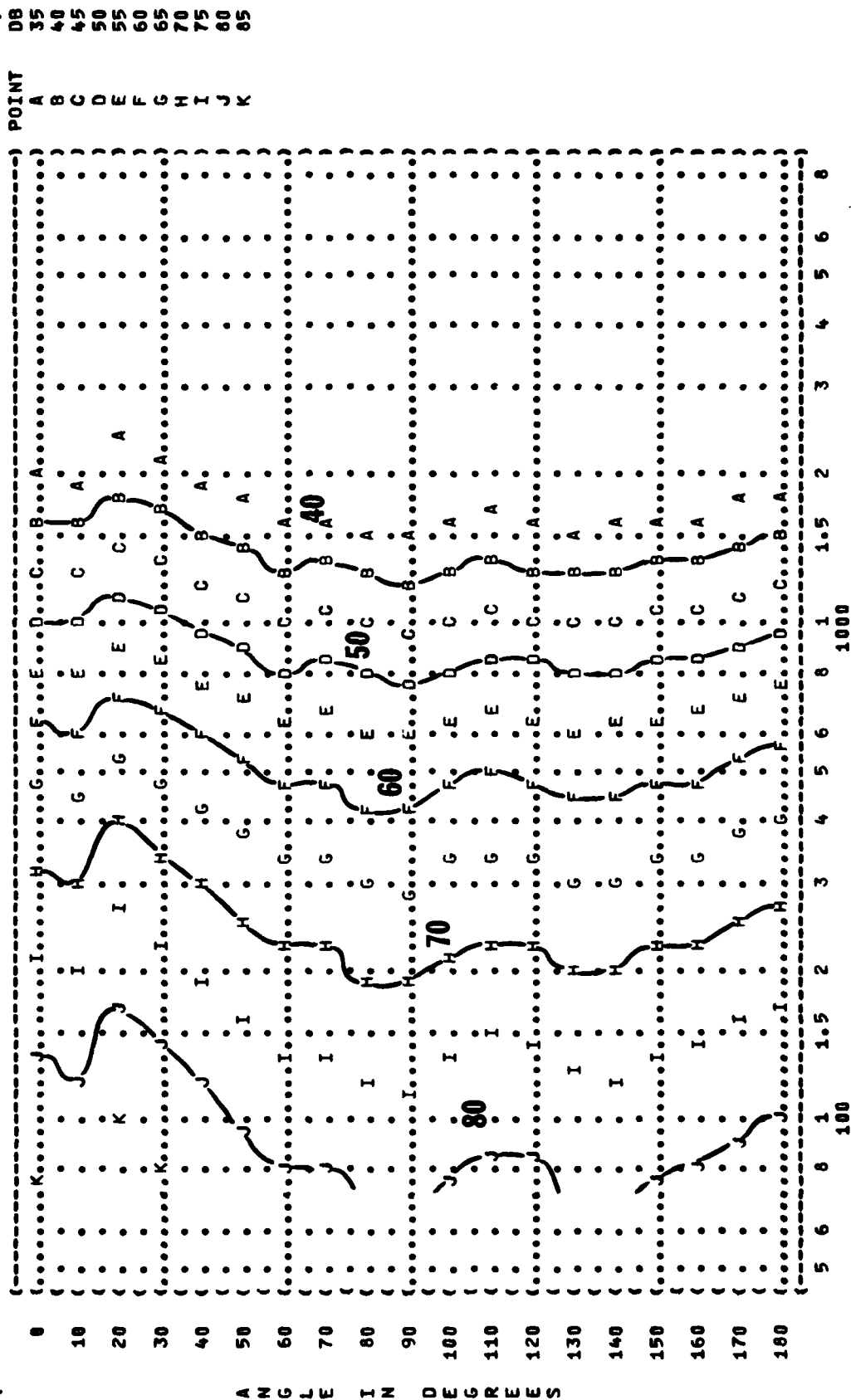
(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (10 31.5 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION: (METEOROLOGY: (IDENTIFICATION: ()
 (F-16 AIRCRAFT IN THE (MILITARY POWER (91% RPM)) TEMP = 15 C) OMEGA 1.4
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE) BAR PRESS = .760 M HG) TEST 79-738-001
 (J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)) REL HUMID = 70 %) RUN 03
 (FAR-FIELD NOISE ()) PAGE 18)



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (10 63 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATIONS:
 (F-16 AIRCRAFT IN THE (MILITARY POWER (91% RPM)
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE
 (J05-21 ENGINE (GROUND RUNUP (SUPPRESSED)
 (FAR-FIELD NOISE ()
 () IDENTIFICATION:
 ()
 () OMEGA 1.4
 () TEST 79-730-001
 () RUN 03
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () PAGE 19

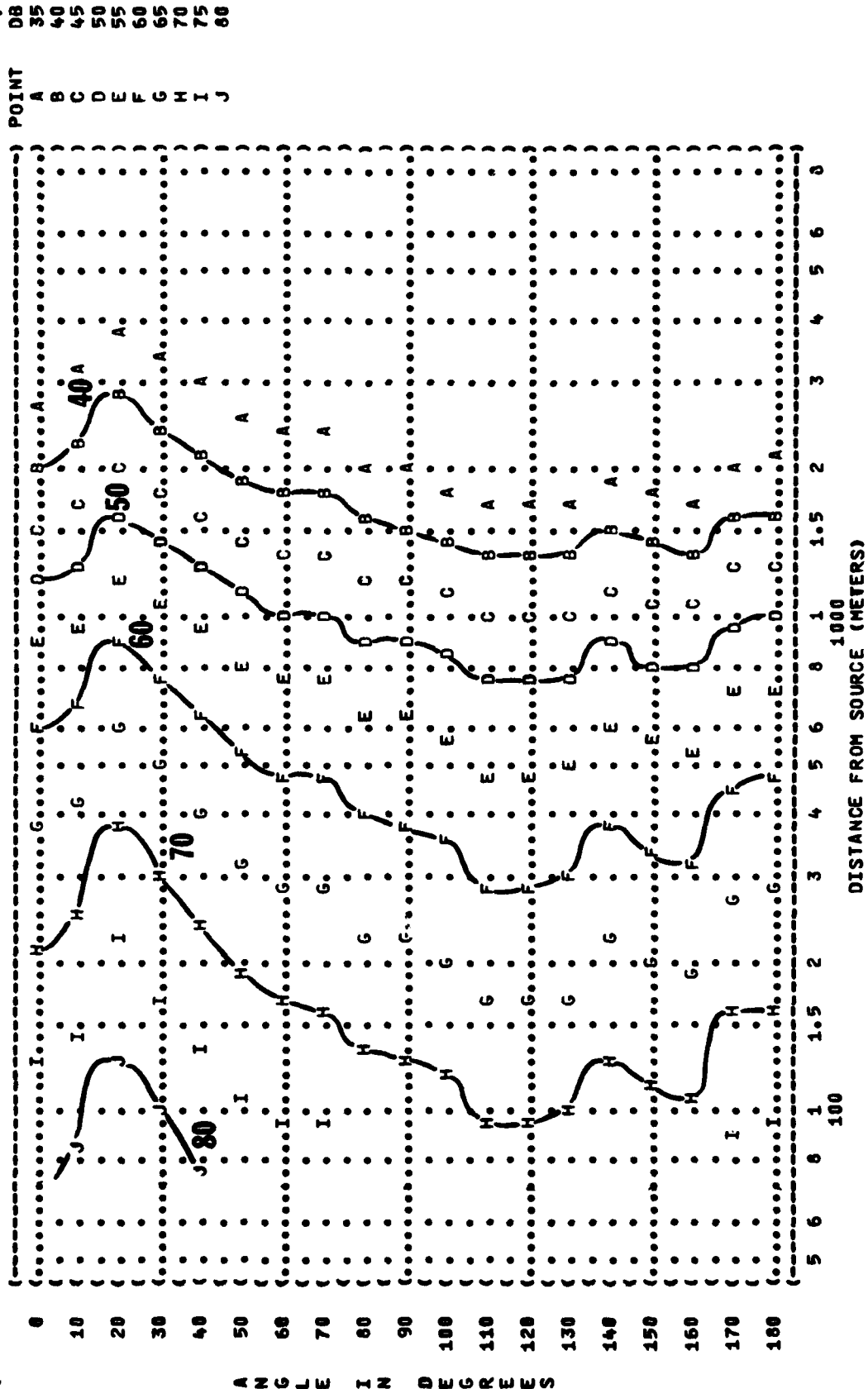


(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (10 250 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (F-16 AIRCRAFT IN THE (MILITARY POWER (91% RPM)
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE
 (J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)
 (FAR-FIELD NOISE ((TEMP = 15 C
 ((BAR PRESS = .760 M HG
 ((REL HUMID = 70 %
 ((PAGE 21
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 79-738-001
 (RUN 03
 (22 MAR 79
 (



A N G L E I N D E G R E E S

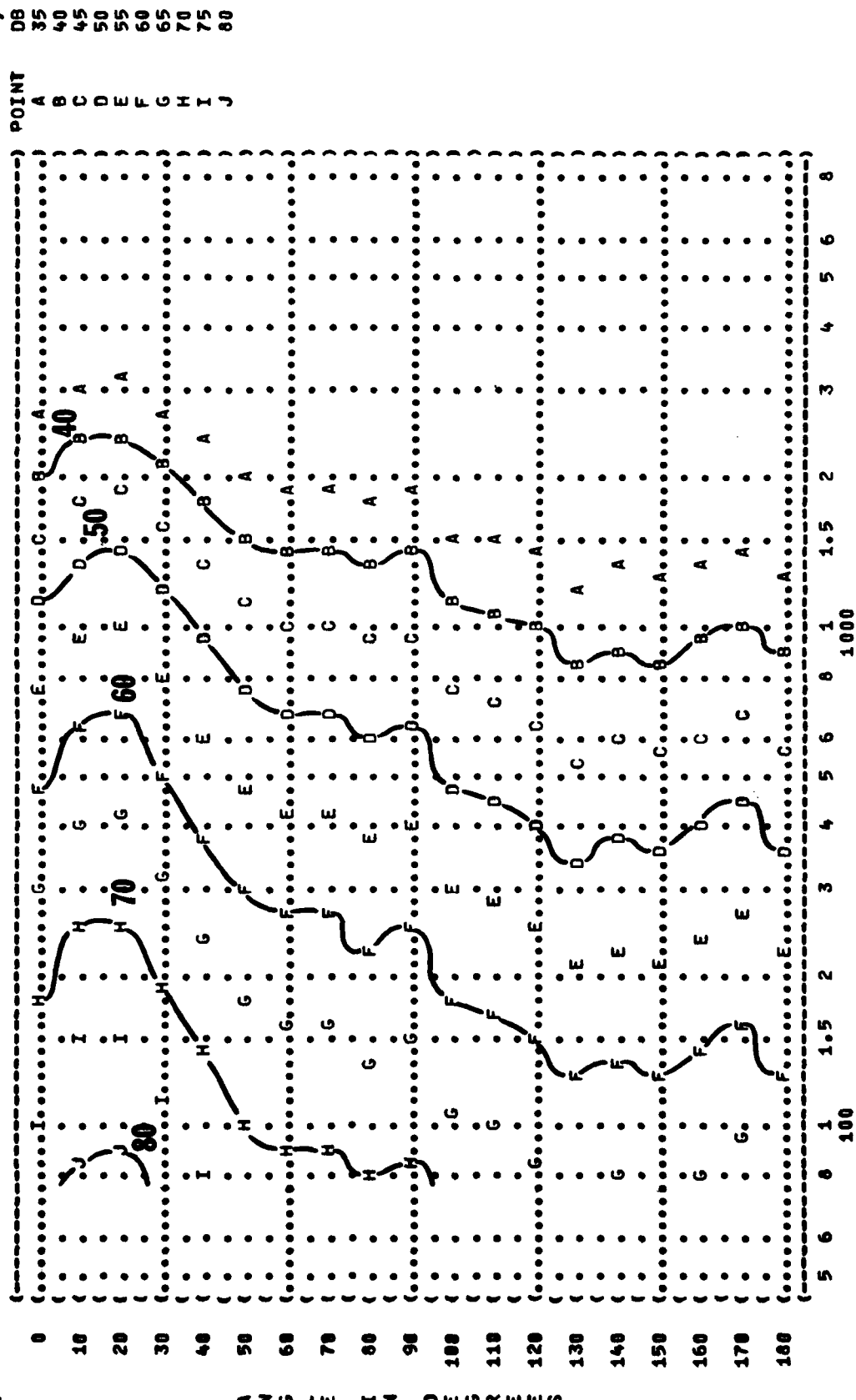
(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (10 500 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT:
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 (AF32A-25 SUPPRESSOR
 (J05-21 ENGINE
 (FAR-FIELD NOISE
 (OPERATION:
 (MILITARY POWER (91% RPM)
 (SINGLE ENGINE
 (GROUND RUNUP (SUPPRESSED)
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 H MG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 79-738-001
 (RUN 03
 (22 MAR 79
 (PAGE 22



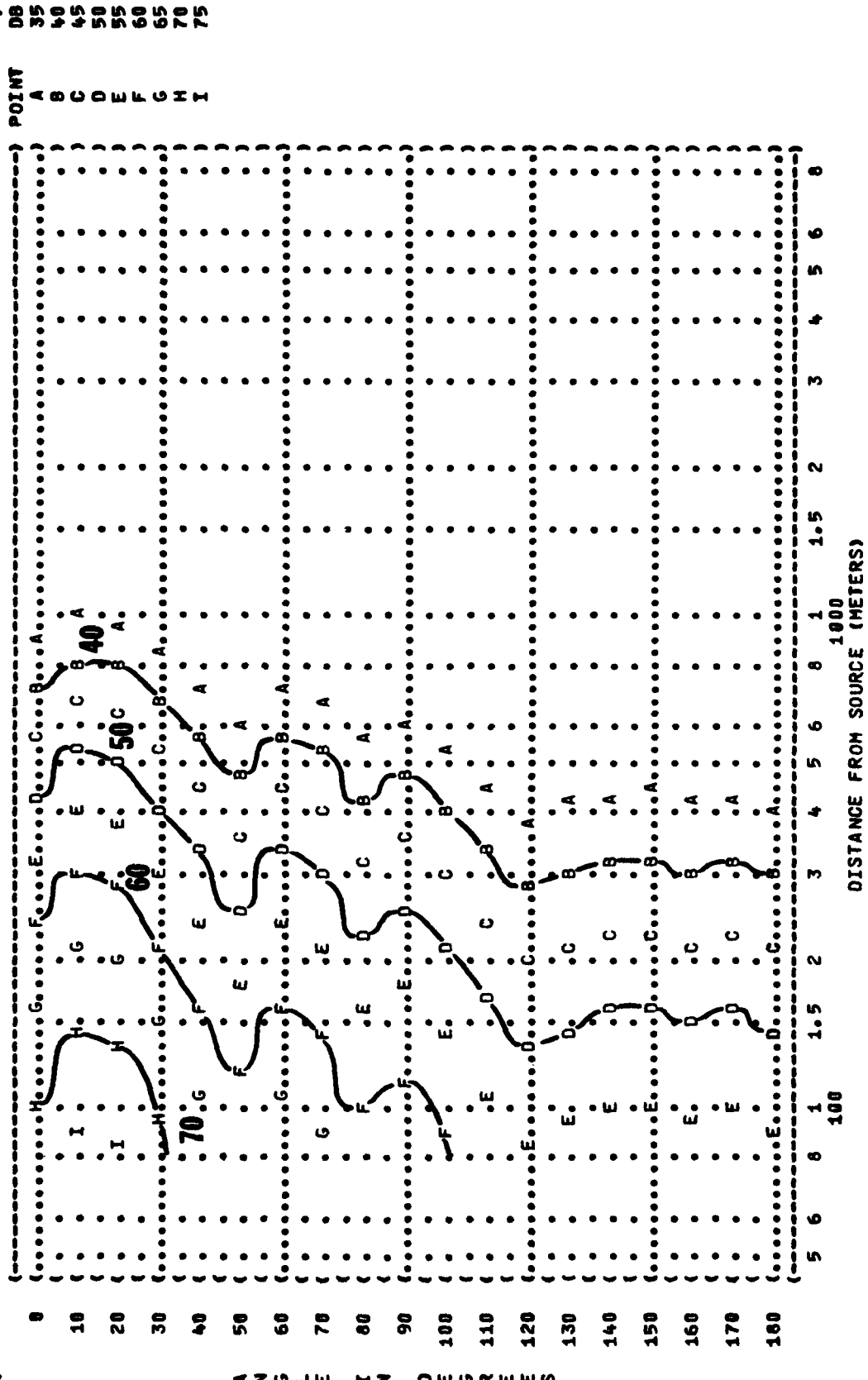
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( ) FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )
( ) EQUAL LEVEL CONTOURS (DB) )
( ) 10 ) OMEGA 1.4 )
( ) 1000 HZ OCTAVE BAND )
(-----)
( ) NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( ) F-16 AIRCRAFT IN THE ) TEMP = 15 C )
( ) AF32A-25 SUPPRESSOR ) SINGLE ENGINE ) BAR PRESS = .760 M HG )
( ) J85-21 ENGINE ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )
( ) FAR-FIELD NOISE ) ) PAGE 23 )
(-----)

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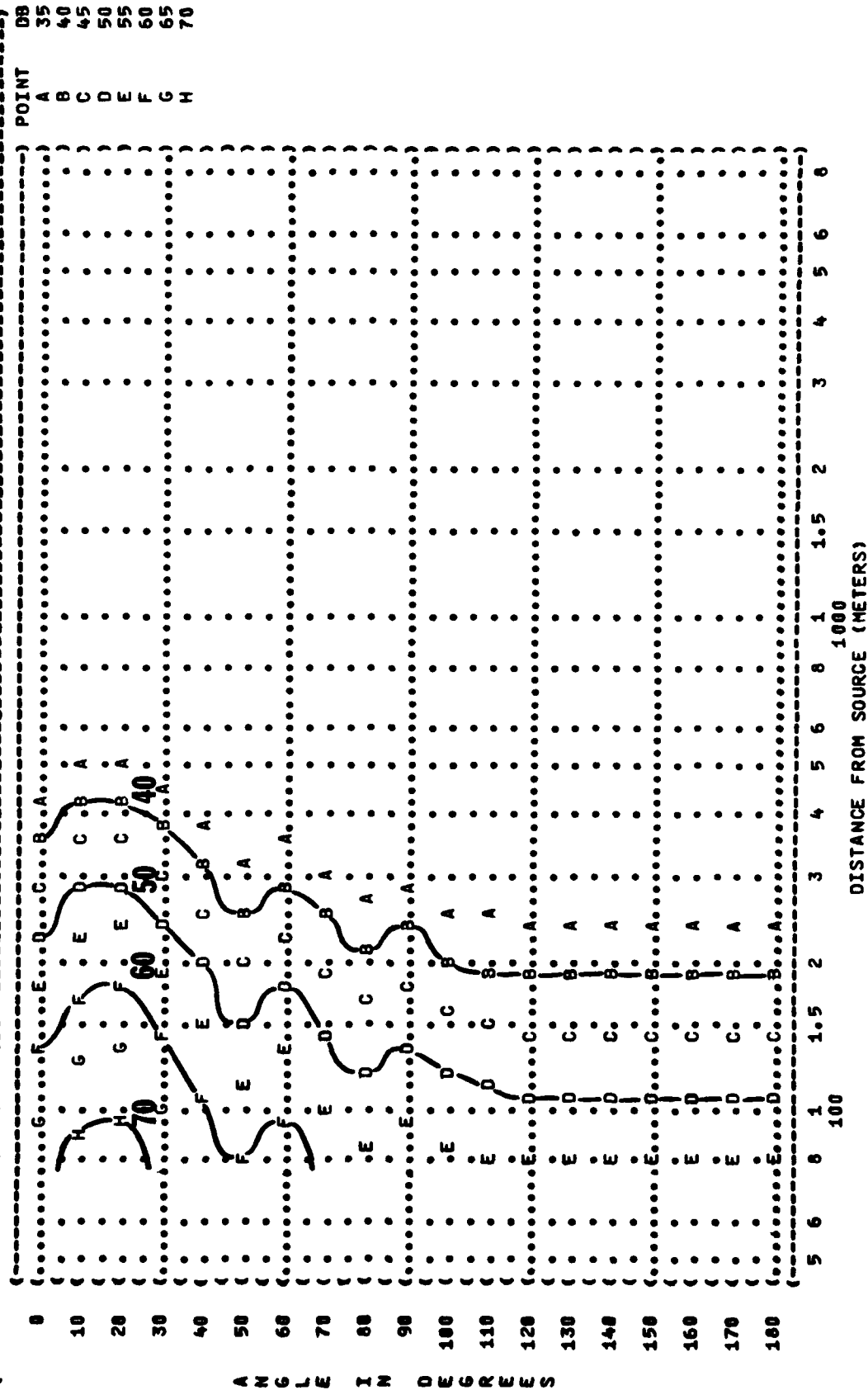


(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (10 EQUAL LEVEL CONTOURS (DB)
 (4000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (F-16 AIRCRAFT IN THE (MILITARY POWER (91% RPM)) TEMP = 15 C
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE) BAR PRESS = .760 H HG
 (J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)) REL HUMID = 70 %
 (FAR-FIELD NOISE ()) PAGE 25



A N G L E I N D E G R E E S

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (10 0000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT:
 (F-16 AIRCRAFT IN THE
 (AF32A-25 SUPPRESSOR
 (J85-21 ENGINE
 (FAR-FIELD NOISE
 (OPERATION:
 (MILITARY POWER (91X RPM)
 (SINGLE ENGINE
 (GROUND RUNUP (SUPPRESSED)
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 H HG
 (REL HUMID = 70 %
 (IDENTIFICATIONS:
 (OMEGA 1.4
 (TEST 79-730-001
 (RUN 03
 (22 MAR 79
 (PAGE 26



ANGLE IN DEGREES

((FIGURE: SOUND PRESSURE LEVEL (SPL)
 ((10 EQUAL LEVEL CONTOURS (DB)
 ((31.5 HZ OCTAVE BAND
 ((NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:
 ((F-16 AIRCRAFT IN THE (AFTERBURNER POWER) TEMP = 15 C
 ((AF32A-25 SUPPRESSOR (SINGLE ENGINE) BAR PRESS = .760 M HG
 ((J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)) REL HUMID = 70 %
 ((FAR-FIELD NOISE () PAGE 18)

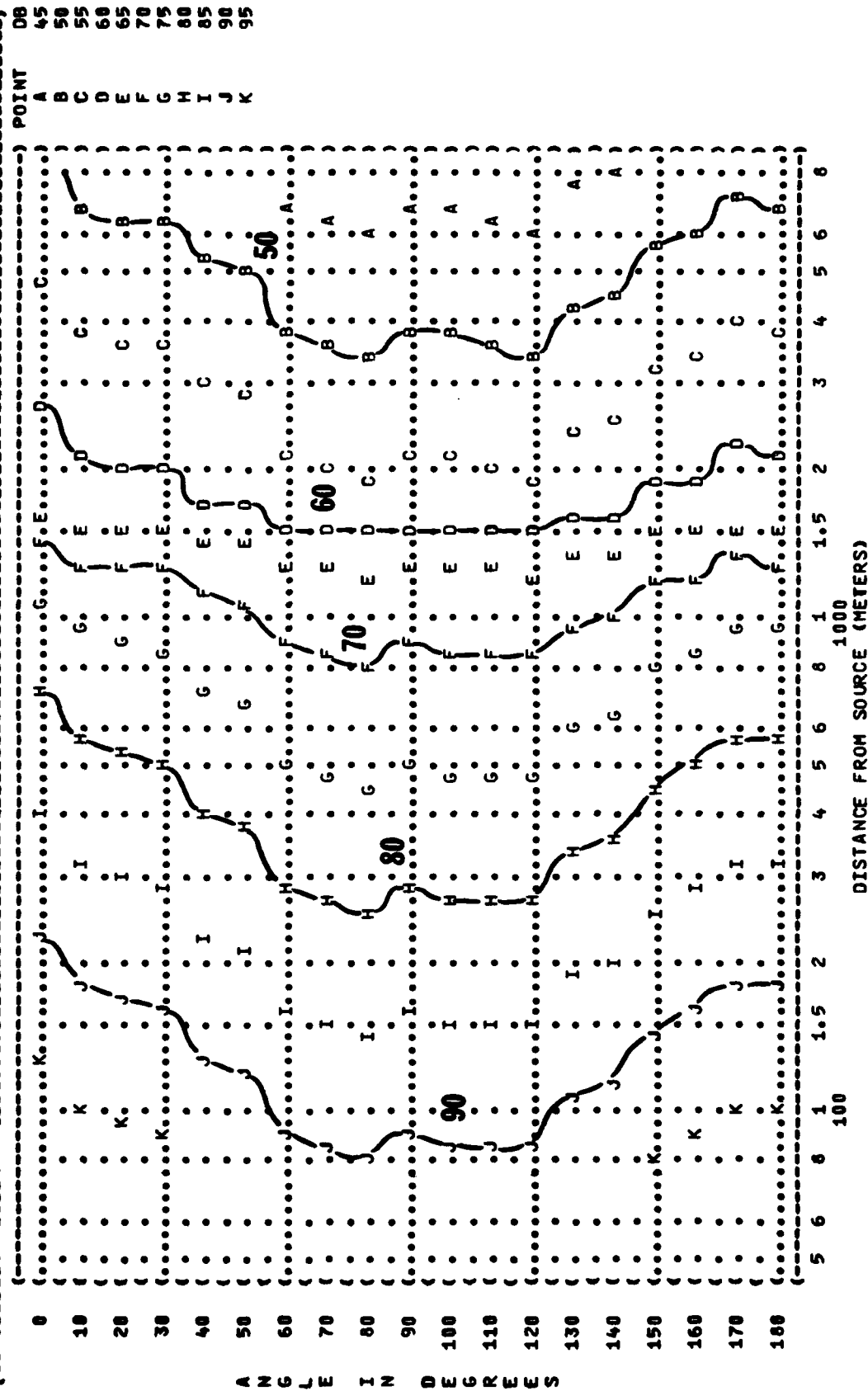


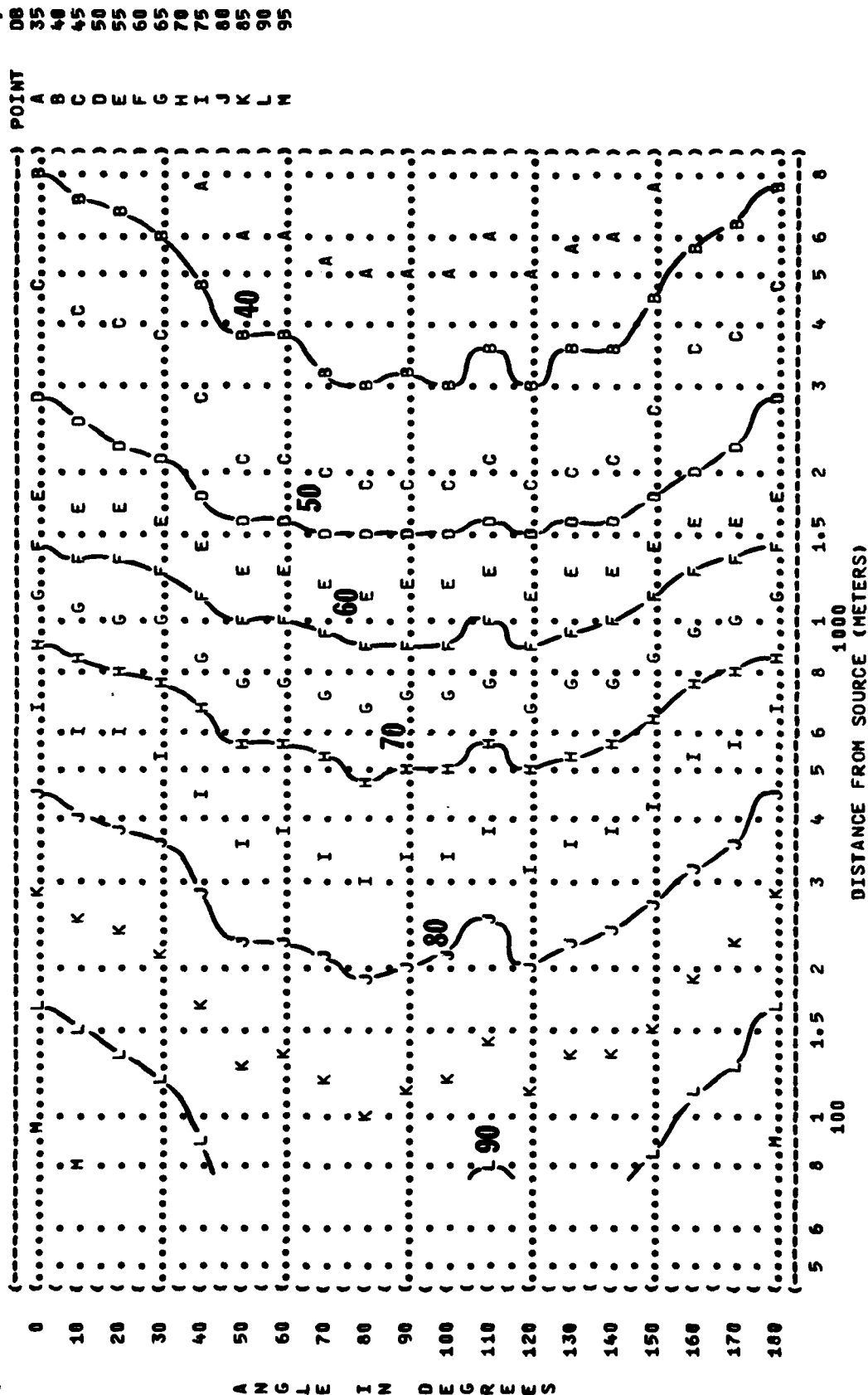
FIGURE: SOUND PRESSURE LEVEL (SPL)
 EQUAL LEVEL CONTOURS (DB)
 63 HZ OCTAVE BAND

IDENTIFICATION:
 OMEGA 1.4
 TEST 79-738-881
 RUN 04

NOISE SOURCE/SUBJECT:
 OPERATION:
 F-16 AIRCRAFT IN THE
 AFTERBURNER POWER
 AF32A-25 SUPPRESSOR
 SINGLE ENGINE
 J85-21 ENGINE
 GROUND RUNUP (SUPPRESSED)
 FAR-FIELD NOISE

METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

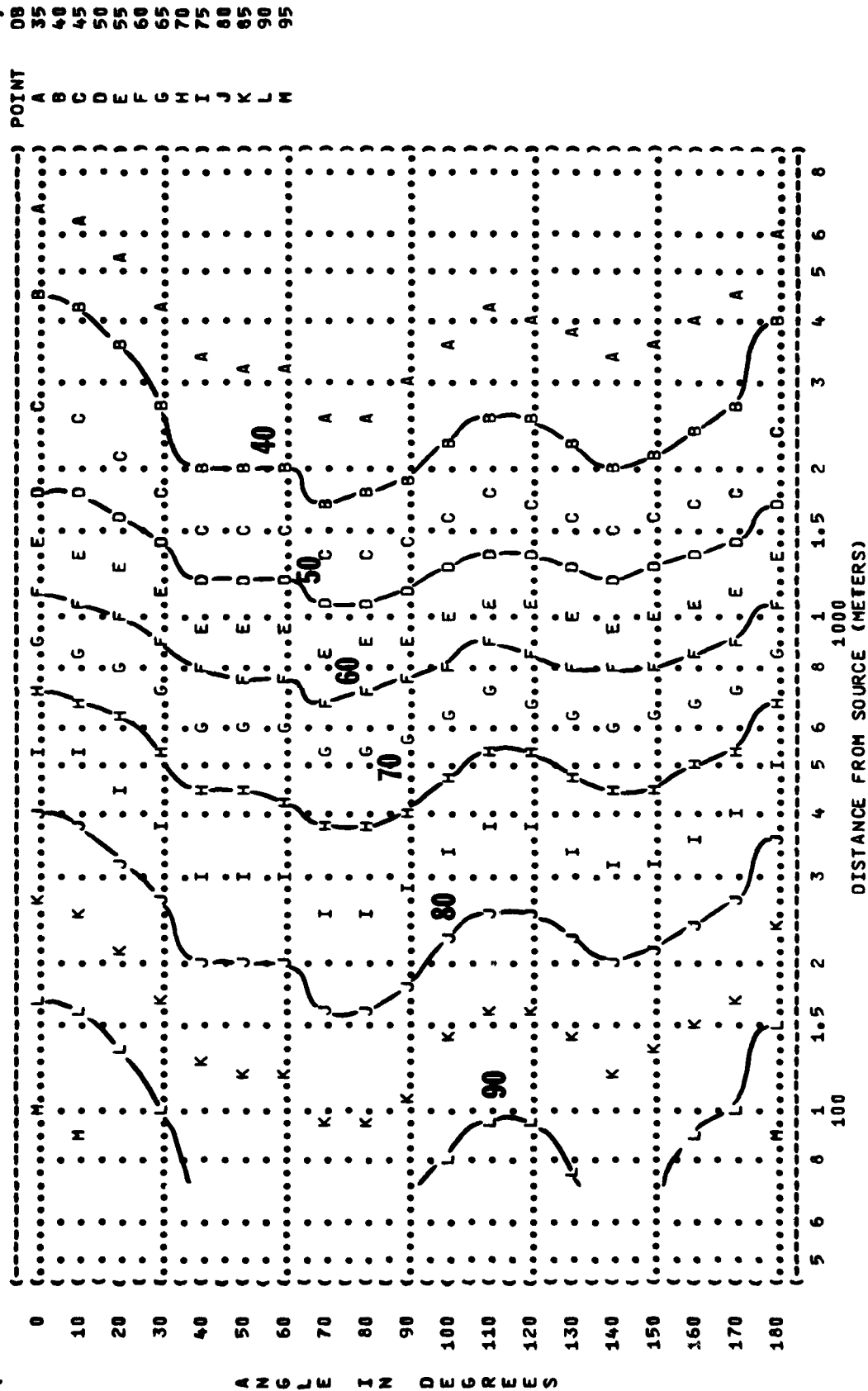
PAGE 19



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(-----)
( ( FIGURE: SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION: )
( ( EQUAL LEVEL CONTOURS (DB) ) )
( ( 10 ) OMEGA 1.4 )
( ( 125 HZ OCTAVE BAND ) )
(-----)
( ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( ( F-16 AIRCRAFT IN THE ) TEMP = 15 C )
( ( AF32A-25 SUPPRESSOR ) BAR PRESS = .760 M HG )
( ( J85-21 ENGINE ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )
( ( FAR-FIELD NOISE ) ) PAGE 20 )
(-----)

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(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (10 EQUAL LEVEL CONTOURS (DB)
 (250 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (F-16 AIRCRAFT IN THE (AFTERBURNER POWER
 (AF32A-25 SUPPRESSOR (SINGLE ENGINE
 (J85-21 ENGINE (GROUND RUNUP (SUPPRESSED)
 (FAR-FIELD NOISE ()
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 79-738-001
 () RUN 04
 () PAGE 21

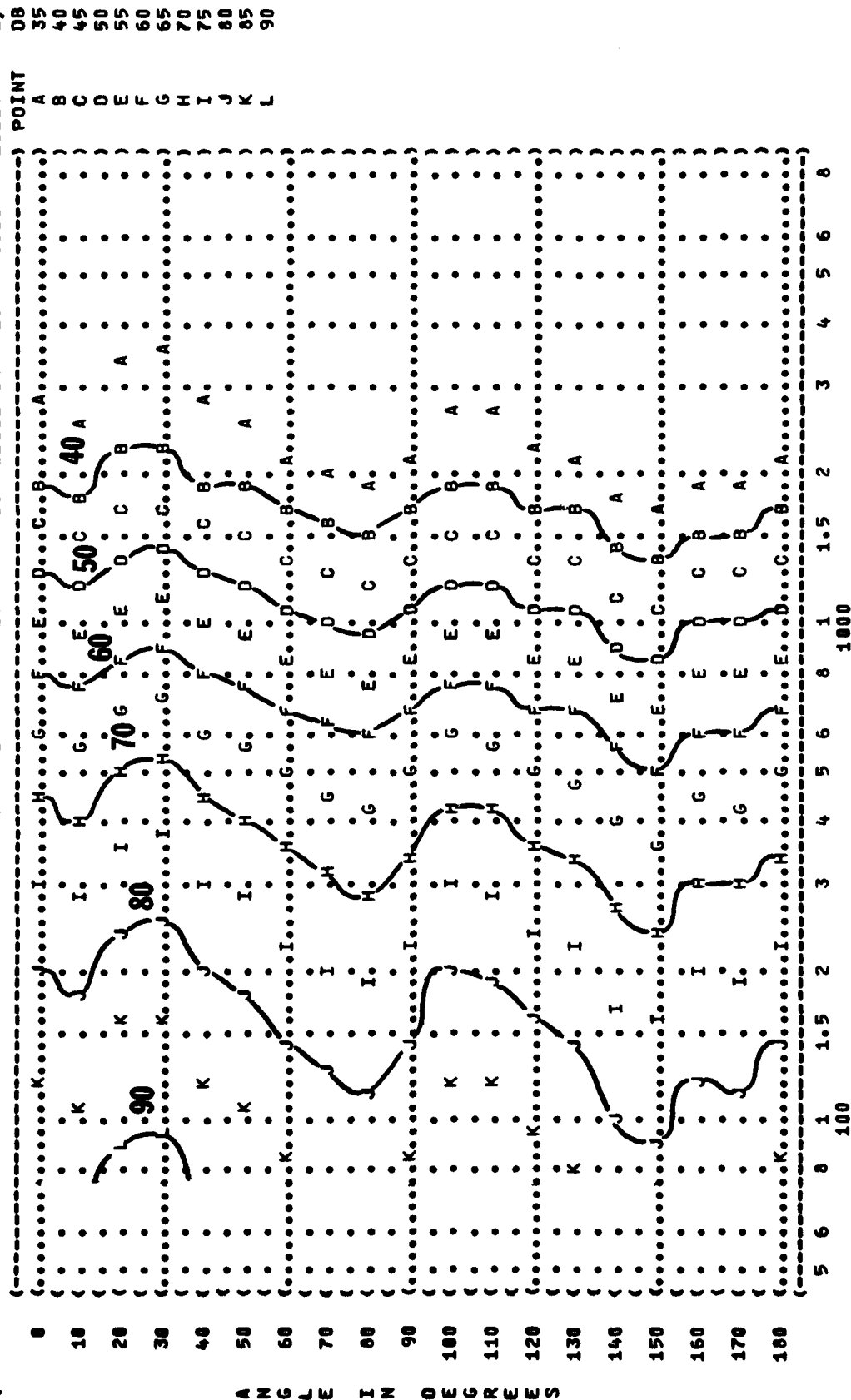
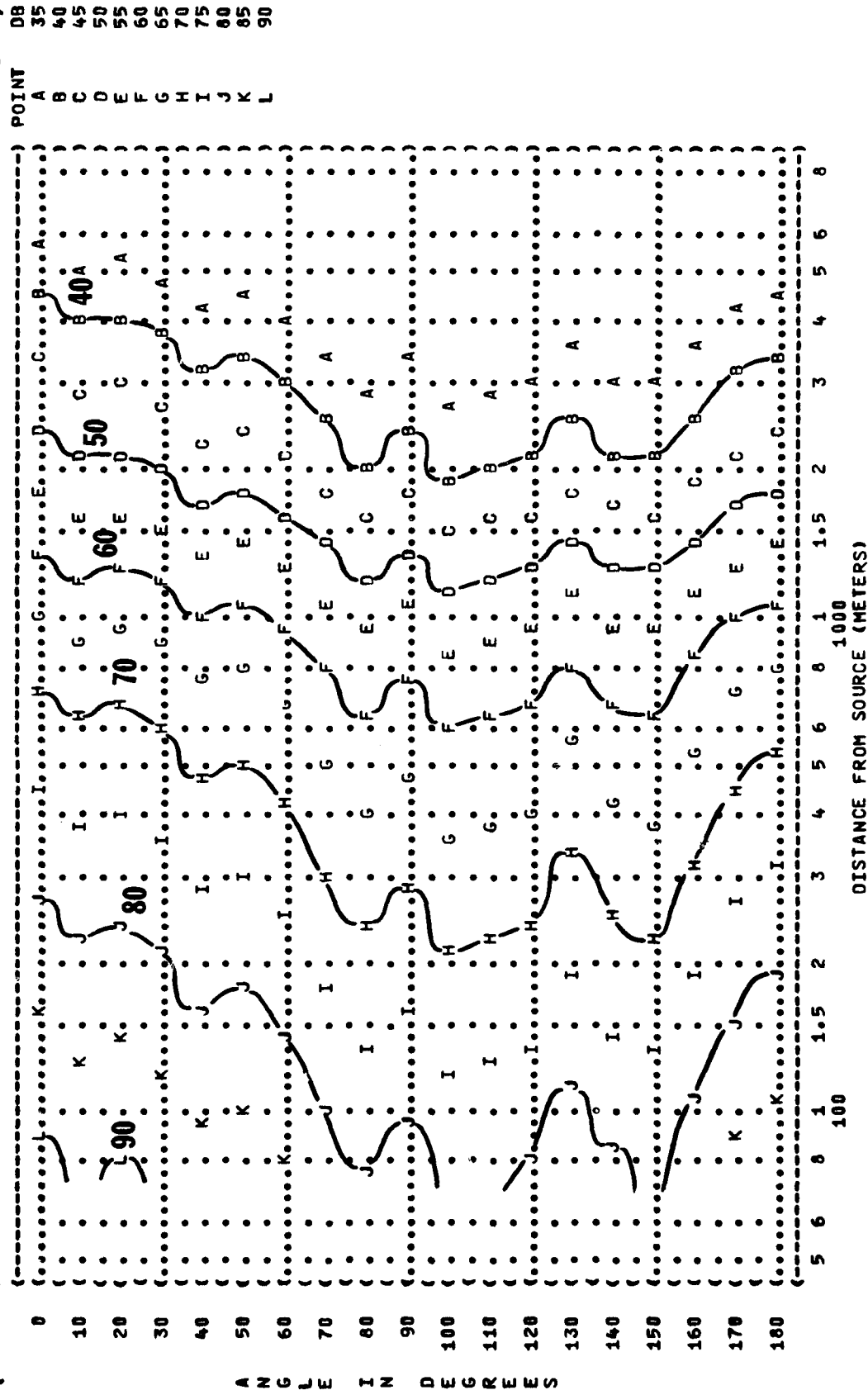
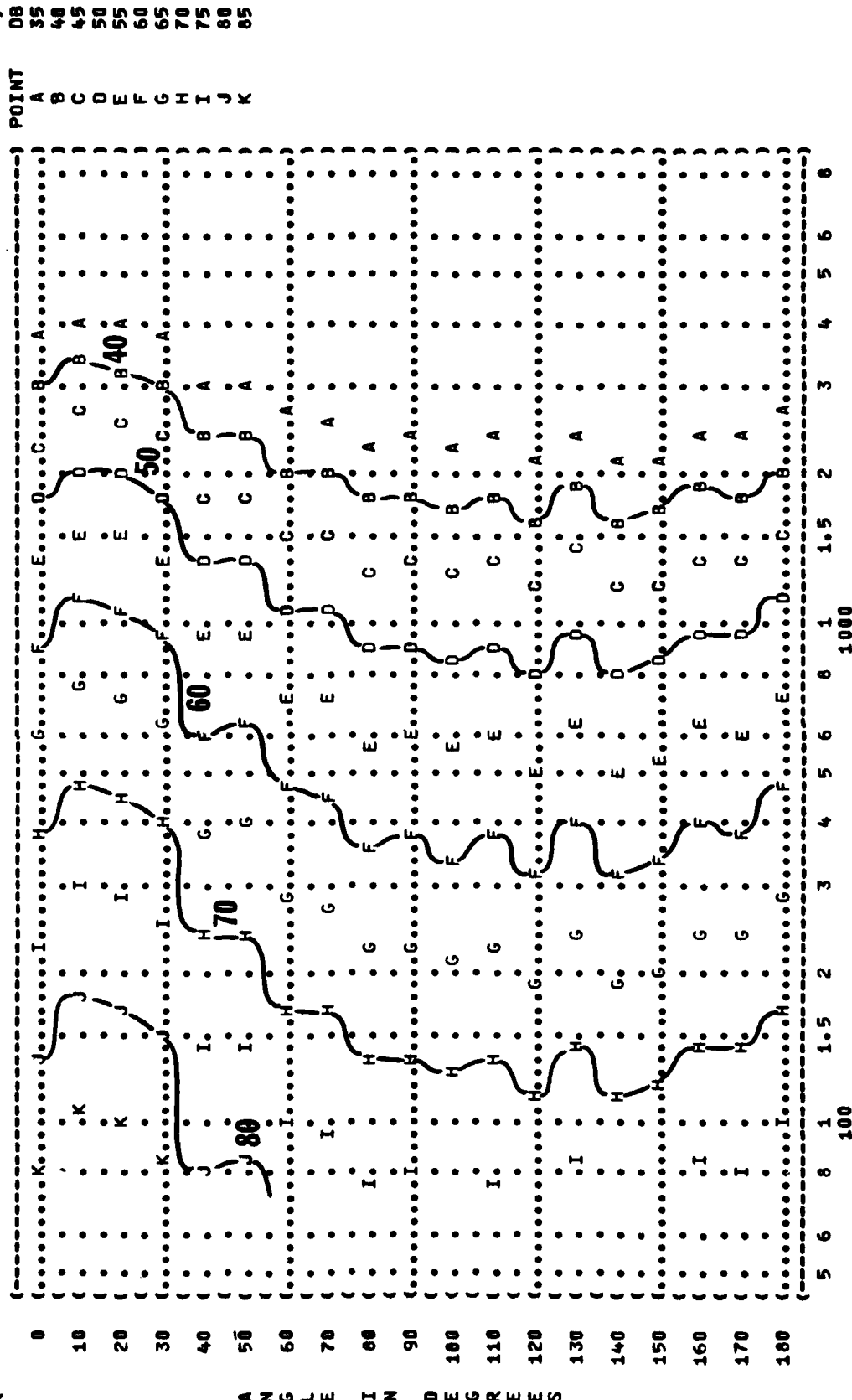


FIGURE 1 SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
500 HZ OCTAVE BAND

IDENTIFICATION:)
OMEGA 1.4)
TEST 79-738-001)
RUN 04)
METEOROLOGY:)
TEMP = 15 C)
BAR PRESS = .760 M HG)
REL HUMID = 70 %)
OPERATION:)
AFTERBURNER POWER)
SINGLE ENGINE)
GROUND RUNUP (SUPPRESSED))
NOISE SOURCE/SUBJECT:)
F-16 AIRCRAFT IN THE)
AF32A-25 SUPPRESSOR)
J65-21 ENGINE)
FAR-FIELD NOISE)
PAGE 22)



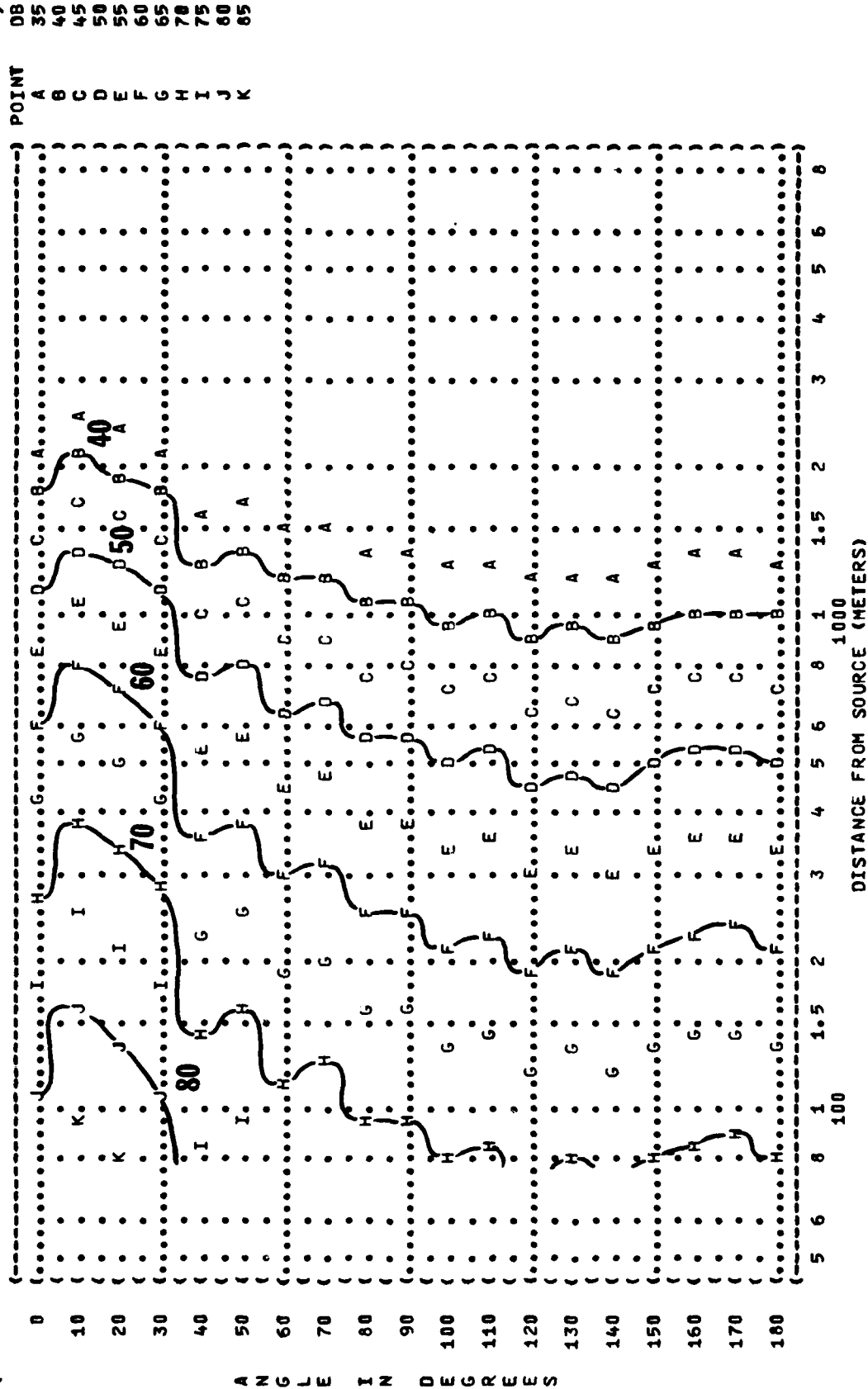
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35	A
40	B
45	C
50	D
55	E
60	F
65	G
70	H
75	I
80	J
85	K



DISTANCE FROM SOURCE (METERS)

420 JW HZ 0500000000

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (10 2000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT:
 (F-16 AIRCRAFT IN THE
 (AF32A-25 SUPPRESSOR
 (J85-21 ENGINE
 (FAR-FIELD NOISE
 (OPERATION:
 (AFTERBURNER POWER
 (SINGLE ENGINE
 (GROUND RUNUP (SUPPRESSED)
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 79-738-001
 (RUN 04
 (22 MAR 79
 (PAGE 24



IDENTIFICATION:
OMEGA 1.4

2

) METEOROLOGY:
) TEMP
) BAR PRESS
) REL HUMID

RUN 04
 22 MAR 79
 PAGE 25



DISTANCE FROM SOURCE (METERS)

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (10 EQUAL LEVEL CONTOURS (DB)
 (8000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT:
 (F-16 AIRCRAFT IN THE
 (AF32A-25 SUPPRESSOR
 (J05-21 ENGINE
 (FAR-FIELD NOISE
 (OPERATIONS:
 (AFTERBURNER POWER
 (SINGLE ENGINE
 (GROUND RUNUP (SUPPRESSED)
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATIONS:
 (OMEGA 1.4
 (TEST 79-738-001
 (RUN 04
 (22 MAR 79
 (PAGE 26

